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THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH,

MEDICAL AND SANITARY REPORT

ON THE

NATIVE ARMY OF BOMBAY

FOR THE YEAR

1878.

FRAMED ON THE WEEKLY AND ANNUAL RETURNS, ON THE REPORTS OF
REGIMENTAL MEDICAL OFFICERS, AND ON THE INSPECTION REPORTS
OF DEPUTY SURGEONS GENERAL.

WITH STATISTICAL TABLES.

Compiled in the Office of the Surgeon General, Indian Medical Department.



Bombay:

PRINTED AT THE
EDUCATION SOCIETY'S PRESS, BYCULLA.

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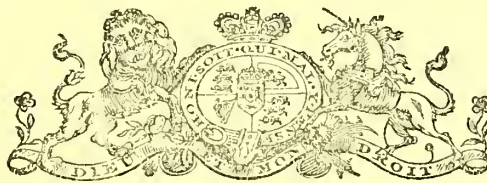
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Note.— As corrected and exact data could not be obtained in time for embodiment in this Report from some Regiments on Field Service beyond the frontier, there may be some discrepancies between the figures here shown and those supplied to the Sanitary Commissioner with the Government of India.



No. $\frac{\text{S. B.}}{375}$ OF 1879.

FROM

THE SURGEON-GENERAL,

INDIAN MEDICAL DEPARTMENT,

TO

THE SECRETARY TO GOVERNMENT,

MILITARY DEPARTMENT.

Bombay, 29th October 1879.

SIR,—In submitting, for the information of His Excellency the Governor in Council, the Medical and Sanitary Report of the Native Army of Bombay for the year 1878, I have the honour to state that I have withheld its submission beyond the usual date, viz. 1st July, in order to conform to the instructions contained in Government Resolution, Military Department, No. 2065, dated 22nd May 1879.

2. The separate regimental reports, drawn up on the revised plan, instituted last year, have been considerably condensed, and such portions only are left as are considered necessary to afford an appreciable estimate of the general health and hygienic conditions of the different corps during the year under review.

3. The table marginally given shows the average strength of the Bombay

Years.	Average strength.	Average daily sick	Average daily sick per cent. to average daily strength.	Admissions.	Deaths
1873 ...	22,967	876·2	3·82	29,035	165
1874 ...	22,750	835·7	3·66	26,601	176
1875 ...	22,819	772·7	3·38	25,475	213
1876 ...	22,583	856·8	3·79	26,918	247
1877 ...	22,561	788·3	3·49	25,130	215
1878 ...	23,671	1042·8	4·40	40,012	305

Army for the year 1878, together with that for the five years preceding: and also exhibits the average of sick, admissions, and deaths for the same period. From this table it will be seen that the ratio of sickness during the past year is far higher than in any of the five preceding, and is but a shade less than that which prevailed in 1872, when “dengue” fever helped so largely to increase the admissions. In an average daily strength present of 23,671, there

were 40,012 admissions, being a ratio per centum of 169·03, against 111·3 in the preceding year, and there was a daily average percentage of sick to strength of 4·40 against 3·49.

4. The number of deaths in hospital amounted to 305, being a ratio of

Mortality. $12\cdot8$ *per mille* of strength present; to this number must be added 151 deaths which occurred out of hos-

pital, making a total of 456, or a ratio of 17·9 per 1,000 of strength, including present and absent. Analysing this death-rate shows that amongst Mussulmans and Hindoos both in and out of hospital, it stood at 15·6 and 19·1 per mille respectively. The ratio of deaths in hospital to admissions was 7·7 per mille. The death-rate is unusually high, and its greater proportionate preponderance amongst Hindoos than Mussulmans would lead to the inference that the former class, owing probably in a great measure to dietetic causes, possess in a lesser degree the vital force necessary to withstand the influences of such an unhealthy season as 1878 proved to be.

5. For convenience I have included the returns of those corps* which took part in the Malta and Cyprus expedition in the total for the Presidency Division and Aden, and this arrangement gives a larger average strength for that Division than any shown in previous years. The following four tables give the average strength, daily sick, admissions, and deaths in hospital, in the Divisions into which the medical administration of the Army is portioned, separately, for the year under review, together with the rates prevailing for the five years preceding it.

* 1st Regt. L. Cavalry.
9th Regt. N. I.
26th Regt. N. I.

Presidency Division and Aden.

Years.	Average Strength.	Average daily Sick.	Admissions.	Deaths in Hospital.
1873	3,358	140·2	4,513	28
1874	3,343	133·4	3,861	32
1875	3,288	125·4	3,551	36
1876	3,207	128·7	3,363	45
1877	3,196	104·2	3,547	40
1878	4,633	175·5	7,440	37

Poona Division.

Years.	Average Strength.	Average daily Sick.	Admissions.	Deaths in Hospital.
1873	8,209	250·4	7,334	35
1874	8,197	241·2	6,855	36
1875	81,459	224·2	7,607	40
1876	74,486	220·4	7,249	42
1877	77,716	261·2	8,671	72
1878	6,822	246·8	9,608	88

Northern Division.

Years.	Average Strength.	Average daily Sick.	Admissions.	Deaths in Hospital.
1873	8450	392·9	13,498	52
1874	8362	376·2	12,426	53
1875	8547·1	318·2	10,714	105
1876	8937·3	365·5	11,177	68
1877	8601·3	294·4	8,977	67
1878	8264	451·9	16,540	131

Sind Division.

Years.	Average Strength.	Average daily Sick.	Admissions.	Deaths in Hospital.
1873	2950	92·7	3,690	50
1874	2848	84·9	3,459	55
1875	2837·5	104·9	3,603	32
1876	2999·4	142·2	5,129	92
1877	2991·7	128·5	3,935	36
1878	3952	168·6	6,424	49

6. The incidence of sickness and mortality as regards Divisions gives a preponderance in the Northern, where the percentage ratios of admissions and deaths to average strength present were 200·1 and 1·6 respectively. The rates of admissions vary much in this Division and range from 346·6 per centum amongst the 11th Regt. N. I. at Bhooj, to 76·4 amongst the 18th N. I. at Deesa. The admission rate in the Bombay Division was 162·5 per cent., but much of this is due to the large number of admissions in the 1st Regiment Light Cavalry, which took part in the Malta expedition; in this Corps they averaged 216·9 per cent. to strength present. The admission rate in Sind was 153·9, the highest rate being that in the 30th N. I. at Jacobabad, viz. 230·9. In the Poona Division the admission rate was 140·8, and the highest prevailing in any one Corps was that in the Sappers at New Jhansi, 272·1. The death rate in hospital in these three last-named Divisions, calculated on the average strength present, gave percentages of 0·8 in the Presidency and Aden, 1·3 in Poona, and 1·2 in Sind.

7. The disease causing the greatest number of admissions was malarious fever. Under this head 59·7 per centum of the total admissions for the whole Presidency are returned, being 16·1 per cent. in excess of 1877, when the rate was 43·6. This admission rate from malarious fevers varies in the different divisions, and ranges from 67·8 per cent. in the Northern to 48·9 in Sind. In the Presidency it was 54·4 and in Poona 55·5. During the year 1877 the percentages under similar conditions for the division as above enumerated were 45·3, 42·1, 40·0, and 43·9 respectively. The divisional rate of increase over 1877 was as under:—

Presidency Division	14·4	per cent.
Poona ,,	11·6	,,
Northern ,,	22·5	,,
Sind ,,	9·3	,,

The increase in this disease has been pretty general, and medical officers have nearly all arrived at the same conclusion as to its cause, viz. an excessive rainfall. In the Northern Division it was very severe and unduly so in the 10th Regiment at Neemuch, the 11th Regiment at Bhooj, the 16th Regiment at Nusseerabad, and the 28th Regiment at Rajkote. The percentages of admissions from this cause on the total treated in these corps were 85·7, 77·2, 75·3, and 73·5 respectively. In the Presidency Division returns the Regiments suffering most from malarious fevers were the 1st Regiment Light Cavalry, the 17th Regiment N. I., Surat, the 21st N. I., Bombay, and the 26th Regiment N. I. Both the 1st Regiment Light Cavalry and the 26th N. I. took part in the Malta and Cyprus expedition, while the 17th N. I. and the 21st N. I. were stationary at Surat and Bombay respectively. In the 1st Light Cavalry the percentage of fever admissions on the total treated was 66·7, in the 26th N. I. it was 62·1, in the 17th 58·5, and in the 21st N. I. 62·5. In the last named Regiment malarious fever has been steadily on the increase for the past two years. In the Poona Division also some of the corps suffered considerably from malarious fever. Amongst the Sappers at New Jhansi it caused 53·4 per cent. of the total admissions; in the 3rd N. I., Kolhapur, it caused 60·0; in the 4th Rifles, at Sattara, 59·1; in the 5th and 8th N. I., both at Poona, 67·3 and 68·4 respectively; and in the 14th, at Belgaum, 59·7. In the Sind Division, too, fevers prevailed to a greater extent than has been known for some years, and its prevalence, especially in Upper Sind, has been attributed to the floods which took place towards the fall of the year. The Regiments which suffered most were the 19th N. I. at Kurrachee and the 27th N. I. at Hyderabad. Those Regiments that are stationed at Jacobabad suffered much more than in previous years. The ratios of admissions in the 19th and 27th were 67·1 and 60·9 per cent. respectively. The percentage of deaths on the total admissions from this disease, taking the Bombay Army as a whole, was very trifling, being only 0·3.

Most of the medical officers speak of it as running a benign course, but at the same time almost prostrating the Regiments while it lasted.

8. The number of admissions from eruptive fevers was 124, as compared with 212 in the previous year. The death-rate from this class of diseases was 1·6 per cent. on the admissions, as against 1·8 in 1877. They were more general in the Northern Division than in any of the others, as every corps therein, with the exception of two, the 3rd Regiment Light Cavalry at Neemuch and the 1st Mountain Battery at Rajkote, returned some admissions under this heading.

9. There were 9 cases of enteric fever reported, of whom 5 died. Five of the cases with 2 deaths took place in the 1st Regiment N. I. at Ahmedabad. There are no particulars given of these cases beyond the following remark in the inspection report of Deputy Surgeon General Wyllie, "The only unusual event was the appearance of enteric fever in April, and 2 deaths unfortunately resulted before it was fully diagnosed. The runlets, here covered, leading from family quarters were suspected, opened out, and the disease at once disappeared." In the 16th N. I. three cases occurred, and the following remark by the Medical Officer in charge is the only record of them, "There were three cases of enteric fever, all of which proved fatal." In the Poona Horse one case is returned which recovered, but there is no special remark made regarding it. Under the instructions contained in Government Regulation No. 1786, Military Department, dated 30th April 1879, a circular has been issued directing medical officers to carefully record and forward the cases of patients suffering from this disease, with a view to help to elucidate the question raised by Surgeon General Gordon of Madras, and in the current year's report I hope to be able to record the result of the year's research as to the frequency or otherwise of cases of enteric fever in the Native Army.

10. The rate of admissions for rheumatism on the total treated was 3·4 per cent. for the whole Presidency, as against 5·0 for 1877. The highest rate prevailed in the Presidency Division 4·8 per cent. and the lowest in Sind 2·2. The rates prevailing in the Poona and Northern Divisions were 3·8 and 3·0 per cent. respectively. The Regiment returning most cases under this heading was the 22nd N. I., which was moved between Ahmedabad, Bombay, Poona and Belgaum in the course of the year.

11. Pulmonary diseases furnished 2·9 per cent. of the total treated, as against 4·5 in 1877. They were more numerous in the Presidency Division, where the ratio per cent. was 4·3, than in any of the others. In the Poona Division they furnished 3·1 per cent., in the Northern 2·3, and in Sind 3·1. The ratios prevailing in the Divisions as just named in 1877 were 3·9, 3·8, 5·4, and 3·1 respectively. The 22nd N. I. suffered more from these affections than any other corps in the Bombay Army. The Medical Officer reports that both at Poona and Belgaum, and on the line of march between these two places, a large proportion of the fever cases were complicated with chest affections.

12. Diarrhœa and dysentery furnished ratios on admissions of 2·6 and 3·5 per cent. respectively, as against 3·1 under each head in 1877. Dysentery more particularly prevailed with greater relative frequency in Sind than in any of the other Divisions. The 30th Regiment alone at Jacobabad furnished 179 cases, but the medical officer states in his report he is unable to give any details regarding those cases. The disease however must have been of a very mild nature in this Regiment, as there was no death attributed thereto, and one man was invalided from the effects of it. In the 1st Regiment Light Cavalry and the 9th and 26th Regiments Native Infantry, which Regiments took part in the Mediterranean expedition, both diarrhœa and dysentery prevailed very considerably. In all three it occasioned

some mortality, one death each in the 1st Light Cavalry and 26th N. I., and three in the 9th N. I. Diarrhœa occasioned three deaths in the 26th N. I. and three in the 24th N. I. at Mehidpoor. It caused two deaths each in the 4th N. I. at Satara, and in the 7th and 28th at Rajkote. The total number of deaths in the Bombay Army from these two diseases was 42, as compared with 20 in the year 1877.

13. The admissions under the head of injuries, &c. were 6·9 per cent. of the total, as compared with 10·3 in 1877. The deaths reported were 13, but 8 of them occurred in the 15th N. I. at Ahmednuggur. The medical officer of this Regiment reports that a fire broke out at a local theatre in the month of May, at which sixteen rank and file and six followers were badly injured and burned. Some eight of the men and five followers died from the effects of their injuries.

14. There was a total number of 626 admissions from syphilis in the entire Native Army for the year. In the Presidency Division 1·5 per cent. of the admissions were due to it, in the Poona Division 2·4, in the Northern Division 0·7, and in Sind 2·2. The stations where this disease was most contracted were Bombay, in the Presidency Division; Kolapur, Dharwar, Malegaon, and Ahmednuggur, in the Poona Division; Mehidpur, in the Northern Division; and Kurrachee and Hyderabad, in Sind.

15. There were 173 admissions, all told, from guinea worm, and 96 of these occurred in stations in the Dekhan and Southern Mahratta Country. Of the former stations, Poona, Sattara, Ahmednuggur, and Mallegaum furnished cases, and in the Southern Mahratta Country, Belgaum, Dharwar, and Kholapur, also furnished some cases. The two latter stations furnished the largest number, and they have been noted in this respect for years past. I think a better conservancy of the bathing as well as the drinking water at all these stations would tend to lessen, if not entirely removed, the loss of sepoy service the State suffers yearly from this cause.

16. In the Northern Division there were 62 admissions from cholera with 35 deaths, being 56·4 per cent.; in the Poona Division there were 19 cases and 13 deaths, a percentage of 68·4; the Presidency Division returned 5 cases with 1 death, a percentage of 20; while not a single case was reported from the army in Sind. In 1877 the number of cholera cases reported was 67 with 39 deaths, or 58·2 per cent., and the cases were distributed with nearly equal proportionate frequency in the Presidency, Poona, and Northern Divisions, while the army in Sind enjoyed a complete immunity from the disease, as is the case in the year under review. The Regiments which suffered most from cholera were the 1st Regiment N. I. at Ahmedabad, and the 6th N. I. at Indore. As regards the 1st N. I., no particulars are given beyond the fact stated by Deputy Surgeon General Wyllie, that cholera lingered in the station from May to July. The cases in the 6th N. I. all occurred in the Right Half Battalion at Indore. Though cholera prevailed in the native city, no case occurred in cantonments till the arrival of this Regiment. Its origin is attributed to the use of offensive water in a nullah near which the sepoys halted on the march in, and the facts given in support of this theory are—1st, that only those men who partook of that water suffered from the disease; 2nd, that the families of the sepoys of this Wing, and the men of the 23rd N. I., who did not halt near the nullah, were altogether free from the disease. The first case occurred on the 14th May, the day following that of the arrival of the Wing at Indore, and the last on the 18th May. In the Left Wing of the 24th N. I. at Augur, a few cases occurred regarding which some interesting details are given by the Medical Officer in charge, Surgeon J. C. Lucas. The Head Quarter Wing of this Regiment at Mehidpur was also affected by cholera, and the origin and progress of the disease are very minutely detailed by Surgeon J. E. Ferguson, who held medical charge. There were a few cases in the Medi-

terranean Expeditionary Force, but as they are fully detailed in the medical report of the Force by Deputy Surgeon General Beatty, printed as an Appendix, it will not be necessary to allude to them further here.

17. Vaccination and re-vaccination has been most carefully attended to by
 Vaccination. all the Medical Officers in charge of Corps.

18. There was a large increase in the admissions from scurvy over 1877,
 Scurvy. they being 251 as against 170. The increase is altogether debitable to the Northern and Sind Divisions, and in the former the stations where it showed most were Mhow, Bhuj, Nassirabad, and Baroda. In Sind, the Regiments stationed at Hyderabad and Jacobabad were most affected. The stations in the Presidency Division where it showed with most frequency were Surat, Bombay, and Aden, and in the Poona Division, New Jhansi and Kholapur.

19. The lines occupied by the Native soldiers are as a general rule very
 Lines. ill-constructed and deficient in many sanitary essentials necessary to render a habitation healthy. Whenever new lines have to be constructed in future, it will be well to note carefully the sanitary instructions as regards the erection of Native houses and laying out of Native villages, published at page 839 of the *Bombay Government Gazette*, dated 25th of September 1879. The principles laid down in these, if applied in the construction of sepoys' huts, will ultimately conduce much to the health and well-being of the inhabitants. One point the medical officers in charge of Regiments generally agree upon is, the great desirability of a well-raised and solid plinth on which to construct the huts. Surgeon Peters, in medical charge of the 2nd Regiment N. I., gives an instance in Belgaum where the dampness of the floors caused by the lodgment of a quantity of rain water behind a recently erected bund in the vicinity of the lines, intercepting the drainage flow, gave rise to a great increase in the number of fever cases. On a sluice gate being opened in the bund, the water subsided, the natural drainage flow went on, and the fever cases became fewer. The lines occupied by the Native troops at Satara are said to be exceedingly bad, and new ones are much needed. Those at Surat are reported by Deputy Surgeon General Moore as badly situated, badly ventilated, and badly constructed. At Aden the lines are said to be situated in about the worst part of it, the houses are small, the streets narrow, and the ventilation defective. The lines at Neemuch occupied by the 3rd Light Cavalry are reported by Surgeon Major McDowell as "miserably small and low huts." The Medical Officer of the 6th Regiment N. I. at Mhow says, "The huts are low, single tiled, without plinths, built of mud and sunburnt brick, and hence they are very damp during and after the rains, which circumstance predisposes the inmates to attacks of malarious fevers and chest affections." The 10th N. I. at Neemuch occupied lines "originally defective as to general construction, space, light, ventilation, and a total absence of plinths." At Deesa the 18th N. I. occupied lines "which have been periodically reported for some years past as old, bad, and past repair." At Mehidpur the lines are reported as old, bad, and not built on plinths. On the other hand, the Native Infantry Lines are reported very good at Poona, Dharwar, Nassirabad, and Malegaon.

20. In stations where at all practicable, the trench system of night-soil
 Conservancy. conservancy and disposal is adopted, and medical officers pretty generally agree as to the advantages in regard to cleanliness and purity of surroundings to be obtained by this system. During the rainy season the trench system does not work so well in consequence of the distance the trenches have to be placed from the lines, the exposure to wet going to and from them, the sloppiness of the ground, and the depreciation of the deodorizing properties of clay when damp. The trenches should be supplemented by latrines at all stations, to be used only when circumstances may interdict the use of the former. But where latrines are brought into use, it is essential that they be so constructed as to reduce to a minimum the

dangers of subsoil pollution, and that a sufficient staff of sweepers be maintained to ensure their being always kept clean and pure. In many stations, from want of space, position of the lines, nature of the soil, &c. &c., the latrine system has to be adopted in its entirety, and in these dry earth as a deodorizer is chiefly used. The general plan adopted is to place iron pans to catch the night-soil, in which it mixes with dry earth, and when these fill, the contents are removed in filth carts somewhere beyond cantonment limits, to be either disposed of as manure, or buried in pits. From both Dharwar and Malegaon the medical officers reported that the trench system was carried out with complete success, and that the ground containing the filled in and disused trenches is now under cultivation. At Deesa trenches are sunk in the beds of nullahs during the dry season and on its banks during the rains. In Baroda the trench system is used during the dry season, and the medical officer reports, "it is found necessary to post police sentries to enforce their being used, and prevent the men from defiling the surrounding country instead." It will be of course no easy task to change the ordinary habits of the sepoy so as to bring them within a proper sanitary system, but the result to be attained is of such immense importance that no trouble taken to secure it will be thrown away. Above all things the surroundings of his dwellings must be clean and well conserved, otherwise the atmosphere permeating them will be tainted and unwholesome, ultimately leading to impairment of health, long residence in hospital, and loss of service to the State.

21. Nearly all the reports speak in favourable terms of the water supply, and it would appear that a greater amount of attention has been paid to this essential of health during recent years. There are however still some stations where the water supply is deficient. At Aden particularly it is reported, "The men get two gallons of sweet and three gallons of brackish water per diem. They complain that the quantity is insufficient, and an increase of one gallon of sweet water has been recommended by the Surgeon of the Regiment, but the increase has not yet been sanctioned." In Sattara the wells in the lines dry up in the hot season, and in consequence the men have to go a long distance for a supply of potable water. It is stated however that a scheme is under consideration for supplying both city and camp with good drinking water, to be brought in from a distance, and when this scheme has been carried out, the lines, it is hoped, will be independent of the wells. In the lines occupied by the 6th N. I. at Mhow, one of the three wells in use "is very near the latrines of the 13th N. I.:" another, used by "Purwarries," "is near the hospital latrine." At Neemuch the supply was scarce during the first half of the year, but improved with the rainfall. Deepening the wells and bunding a lateral nullah has had an appreciable effect on the quantity of the supply. Surgeon Ferguson, of the 24th Regiment N. I., reporting of Mehidpur, says, "a constant supply of good water is still a desideratum," and I would invite attention to the details he enters into of the defects of the present one. The Surgeon of the 1st Sind Horse reports that, "the water of the outposts is extremely bad on account of dissolved impurities, Soorie being worst in this respect." In the report of the 19th N. I. the Medical Officer says, "The water of Kurrachee, apart from its being of inferior quality, is decidedly limited in quantity." With these exceptions, the water supply is spoken well of, and the medical officers stationed at Poona particularly speak in the highest terms of the Kurruckwasla water supplied to the lines.

22. As in the previous year, the ruling prices of food grains ranged very high; and reports pretty generally speak of the difficulties sepoy, more particularly those with families to maintain, had to contend with in providing themselves with a sufficiency of wholesome food. Under the most favourable circumstances however it does not always follow that sepoy, particularly Hindoos, will provide themselves with the first quality of food grains while they can get damaged or inferior grains at a cheaper rate. This at least seems to be the general prevailing impression, and to obviate

its consequences and secure as far as possible the physical strength to be obtained only by a sufficiency of good and sustaining food, it is proposed by some to issue rations to the sepoys on a system which would not excite caste prejudice. Surgeon Major Ross, of the 4th Rifles, particularly alludes to this point, and his remarks would seem worthy of consideration. I have had in a former paragraph of this report to refer to the greater proportionate preponderance of mortality amongst Hindoos than Mussalmans, and this fact would lead to the inference that the more liberal and less parsimonious view of the latter race as regards the food they consume, have much to do with giving them a greater power of resistance to the inroads of disease.

In regard to clothing I have nothing to add to what has been previously urged in former reports. The remarks of many of the medical officers in regard to the number of men who lie up in hospital, thereby causing the State the temporary loss of their services, on account of simple "shoe-bite," I would beg to bring to the prominent notice of Government. Should the sandals recommended in my last year's report be considered "unmilitary," a greater attention to the proper fitting of the boot and the general use of a thick woollen sock, would go far to obviate the occurrence of this source of trouble and inconvenience.

23. Whilst the generality of hospitals have been well reported on as regards accommodation, hygienic condition, &c. &c., there are still a few that require many improvements to render them proper receptacles for the sick. Of the hospital at Sattara, Surgeon Major Miller, 8th N. I., says, "There is no proper hospital at this station for the Native Troops. It is merely an ordinary bungalow in the Sudder Bazaar, rented for the accommodation of the sick. A regular hospital is very much required, and if new lines are built, one must be got. The present house is too small, and the sick are too crowded, and tents have to be pitched for their treatment." I would also beg to urge on the notice of Government his further remarks on the same subject, and to solicit their early consideration for some means to provide proper hospital accommodation for the sick amongst the Native Troops at Sattara. The hospital of the 14th N. I., Belgaum, is complained of on account of its darkness, and Surgeon Major Hughes further calls attention to "the want of an observation ward in which cases of infectious disease might be segregated, pending the pitching of a tent or the erection of a shed." The hospital of the 1st Sind Horse at Jacobabad is said to be exceedingly damp and the brick flooring is all crumbling away.

24. In the treatment of malarious fever cinchona febrifuge was very largely used as a substitute for quinine, with most satisfactory results. At its first introduction there was a certain amount of prejudice against its use, and in consequence of its being so much cheaper than quinine, it would appear that a kind of impression got abroad that motives of economy alone were at the bottom of its introduction as an agent in the treatment of ague amongst the Native Troops. In time this feeling wore away, and an impartial use of the drug, not alone amongst military medical officers, but by those also in civil employ, has led to the conclusion that quite 75 per cent. of the ordinary malarious fevers met with can be successfully treated with it. I have to highly commend the careful manner in which its value was tested by Surgeon Ferguson, 24th N. I., and the comprehensive table, to be found in his report, in which he records its success as compared with "specifics" usually used in the treatment of malarious fevers. Its issue to the various medical charges in conjunction with quinine is now confined to the relative value experience has shown it bears to that drug as a specific, thereby causing a large saving to the State.

25. I beg to attach as an appendix to this report a short medical history of the expeditionary force which left Bombay in April 1878, drawn up by Deputy Surgeon General Beatty, Mediterranean expedition.

who accompanied it as Principal Medical Officer. The medical equipment of such portion of the force as was fitted out in Bombay, consisted of a field medical companion, a pair of field medical panniers, two reserve chests, and a splint box. This equipment differs materially as regards construction, arrangement and contents from any heretofore supplied, and the modifications were such as suggested themselves to meet the exigencies of field service in this country. A similar equipment was despatched with such of the Bombay Troops as took part in the operations in Afghanistan, and the Principal Medical Officer with the Kandahar column has reported to this office in regard to it, "I have been so much impressed with the suitability for field service of both the field panniers and reserve chests supplied to Troops belonging to the Bombay Presidency, as to completeness of fittings and of the materials they contain, that I have fully resolved to recommend, at the close of the expedition, that similar arrangements should be adopted for the Bengal Presidency."

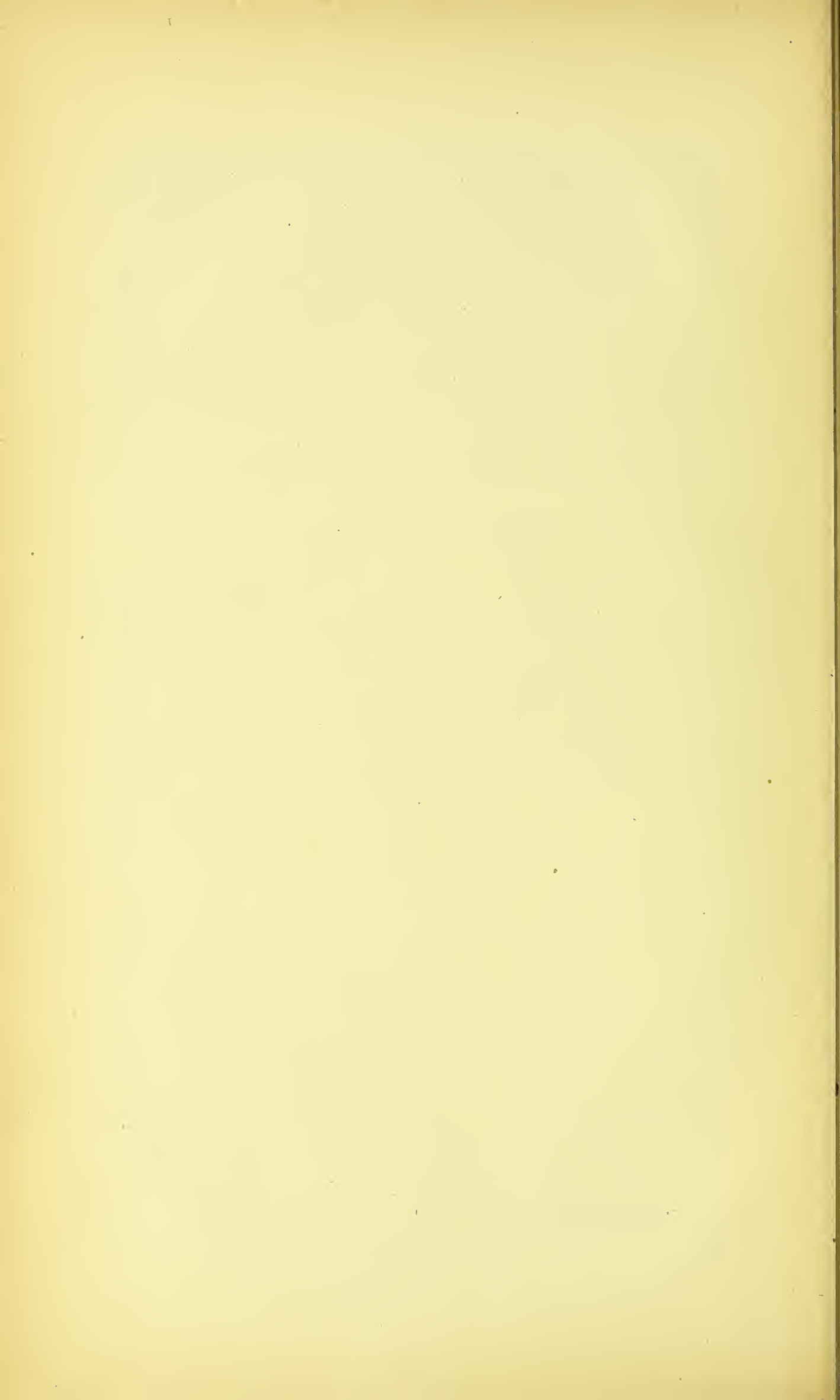
I have the honour to be,

Sir,

Your most obedient servant,

W. G. HUNTER, M.D.,

Surgeon General.



MEDICAL HISTORY OF THE MEDITERRANEAN EXPEDITION.

By Deputy Surgeon General BEATTY, P. M. O.

Under Circular Memorandum No. $\frac{987}{B}$, dated 18th April 1878, Army Head Quarters, the marginally noted Troops embarked for service in the Mediterranean. The force embarked in two Divisions, the first on 29th of April, consisting of—2 Batteries R. A. (M 1 and F 2); 3 Regiments N. I. (13th Bengal, 31st Bengal, and 2nd Ghorkhas); 2 Companies Sappers and Miners, Bombay; 25th Madras N. I. embarked from Cannanore.

2nd Division.

After the 29th 2 Regiments Native Cavalry (9th Bengal Cavalry and 1st Bombay Lancers); 2 Regiments Native Infantry (9th Bombay N. I. and 26th Bombay N. I.); 2 Companies Sappers and Miners, Madras.

The average strength of all arms attached to the Expeditionary Force was as under—

	Europeans.			Natives.		Followers.		Horses.	Ponies.	Bullocks.
	Commis- sioned Officers.	Warrant Officers.	Non-Com- missioned Officers, Rank and File.	Commis- sioned Officers.	Non-Com- missioned Officers, Rank and File.	Public.	Private.			
Strength.	126	6	339	132	5,506	1,717	820	1,330	484	42

Distribution of Troops and Medical Officers on board the Transport ships. The following was the distribution of Medical Officers on board the Transports :—

Ship.	Corps.	Medical Officer.
Malda	31st Bengal N. I.	Medical Officer in charge, 1 Hospital Assistant of Corps.
Madra	Ditto	Surgeon Manser and Senior Hospital Assistant of Corps.
St. Osyth.....	2nd Ghorkas	Medical Officer of Corps.
Bengal.....	13th Bengal N. I.....	Ditto ditto.
Maravel	M. 1 R. A.	Ditto ditto.
Hospodar.....	M. 1 R. A.	Surgeon Wilson.
Clydesdale	F-2 R. A.	} Medical Officer of Corps and Assistant Apothecary.
Helen Scott.....	Ditto	
Oriflamme	13th Bengal N. I. and Sappers.	Surgeon Dane, in charge Sappers.
Canara	Madras Sappers and De- tachment 9th Bombay N. I.	Medical Officer in charge of Sappers.
Bangalore	9th Regiment N. I.	Surgeon Channer.
Suez	1st Lancers.....	Surgeon Major Colston.
Nankin.....	26th Bombay N. I. and Detachment 9th Bengal Cavalry.	Surgeon Major Hunter.

Ship.	Corps.	Medical Officer.
Marina	26th Bombay N. I.	Junior Medical Officer, Surgeon Clarkson
Macedonia	Detachment 9th Bengal Cavalry.	Passed Medical Pupil Azeezoola Dawood-sha.
Trinacria	Detachment 1st Bombay Lancers.	Passed Medical Pupil Dhunjeebhoy Rut-tonjee, No. 742.
Baron Colonsay	1st Bombay Lancers.....	Junior Medical Officer, Surgeon E. W. Young.
St. Mildred	Ditto ...	Hospital Assistant 9th Regiment N. I., Shaik Kadir.
Hannibal.....	Ditto ...	Senior Hospital Assistant Samuel Samson, from 9th N. I.
Brambletya	Ditto ...	Surgeon Street and Hospital Assistant of Corps.
Kilkerran	9th Bengal Cavalry ...	Apothecary Robinson.
Narcissus	Ditto ...	Assistant Apothecary Cardoz.
Arosboy	Ditto ...	Medical Officer of Corps.
Citadel	Ditto ...	Surgeon Adey and Passed Medical Pupil.
Seaforth	Ditto ...	Surgeon Koyajee.

Previous to sailing, a careful medical inspection was made of each Transport, and written sanitary instructions as under were communicated to the several officers placed in medical charge.

“All Medical Officers and Medical Subordinates proceeding in charge of Troops with the Expeditionary Force, are requested, during the voyage, to see that the following sanitary arrangements are most carefully attended to—

“1. They are to keep a constant watch over the ventilation, and see that the windsails are regularly trimmed, and by going between decks occasionally to ascertain that the men do not tie them up at the bottom.

“2. They are to see that great attention is paid to the cleanliness of the water closets, and necessary boxes, down which buckets of water are to be thrown frequently each day to flush them: disinfectants should also be used.

“3. They are to ascertain that their vessel is provided with a supply of disinfectants, and articles of fumigation.

“4. The frequent fumigation of the ship is deemed highly desirable, which may be done by mixing the following ingredients:—

Common salt.....	4 parts.
Oxide of manganese, in powder	1 part.
Sulphuric acid	1 part.
Water	2 parts.

“5. They should enforce the strictest personal cleanliness on the men, and impress on them that frequent washing of every part of the body is an essential requisite to the preservation of health.

“6. The sick should be separated from those in health as much as possible.

“7. On the first appearance of any acute infectious disorder in those troopships which are under the charge of medical subordinates, they shall at once report the matter to the Officer Commanding, with a view to his getting the commander of the vessel to signal to one of the other vessels for superior medical aid.”

That these instructions were scrupulously attended to was manifest from the fact of so little sickness appearing amongst the troops during the voyage from Bombay to Malta.

Under the immediate direction of the Surgeon General, the following field equipments were supplied to each Regiment of Cavalry, Infantry, and Nos. 3 and 5 Companies of Sappers and Miners:—

- 1 field medical companion, intended for emergencies on the line of march, in the field, or elsewhere, to be carried or slung over the shoulder of an Assistant.
- 1 pair of field medical panniers, weight 80 lbs. each, intended to be carried by mules or ponies on service.

2 detachment medicine chests, weight about 50 lbs. each, which can be carried by a cooly, for use on board ship and shore, in event of part of a Regiment being detached for service.

2 chests, Nos. 5 and 6, containing reserve stock of medicines, calculated for a 6 months' supply, weight about 125 lbs. each, which would require camel or cart transport.

1 splint box.

A list of the contents was pasted inside the lid of each pannier or box.

The Regiment for which each box was intended was legibly painted on the lid.

Each medical officer was instructed to supply himself with a surgical pocket case, which should be carried in the pouch of his shoulder belt. Instructions were given that the greatest care should be taken not to disturb the authorized arrangement of the contents of the field medical panniers, and that deficiencies should always be made good from the reserve stock.

The Commissary General supplied 3 dozen bottles of limejuice, with proportionate quantity of sugar (in addition to the quantity supplied as medical comforts) for issue on board each ship when necessary, on the recommendation of a medical officer.

It may here be remarked that it would have been impossible to have despatched a force in a more complete and efficient state, as far as medical arrangements were concerned, than the one which left Bombay on the 28th of April. This being the first army of Native Troops which had proceeded to Europe, I had, previous to starting, received explicit orders from the Surgeon General to bring to his immediate notice any improvement or deficiencies which future experience might render apparent. In view towards the detection thereof, the most watchful observations were being constantly made both by myself and the medical officers serving under me, but after several months' experience it was unanimously agreed that, with the exception of some alteration in the sick carriage arrangements, subsequently reported on, no improvement could be suggested in the medical supplies and equipments furnished to the expeditionary force.

On the morning of the 27th, whilst in the train from Kirkee to Bombay, a native follower belonging to F-2 Battery was seized with cholera, and died in the evening of the same day. During the evening, almost immediately after arrival, when under canvas on the Esplanade, a sergeant was attacked. He was at once sent to the Colaba Hospital, where he died. On the 28th morning 3 gunners were seized; they also were sent to hospital, but all three cases proved rapidly fatal.

On the evening of the 28th April, the immediate embarkation of the men was determined on by the authorities, both civil and military; the M-1 embarking on board the ship Maravel, and the F-2 on board the Clydesdale. The total strength on board the former was—

European Officers.....	3
Gunners.....	101
Camp Followers	109
Total.....	<u>213</u>

The above number embarked on the 28th April, and on the 29th a case of cholera occurred in a Gunner, who was at once sent on shore; the case proved fatal. The ship sailed on the night of the 29th, and on the morning of the 2nd May another case occurred in a corporal of the battery, who died that same afternoon. During these two days and throughout the voyage every means were resorted to for improving and preserving the sanitary condition of the ship, and recommendations bearing on the health of the men were cordially responded to by the authorities on board.

On the afternoon of the last named date, a seaman of the ship was seized and died the following morning. On the 3rd May a gunner was attacked with the disease, but subsequently recovered. This was the last case of cholera which occurred, making in all, from 28th of April to 3rd May, four cases, of which three proved fatal.

There were however during the same period and up to 7th May nine cases of choleraic diarrhoea reported, all of which recovered under treatment.

The between decks, where a case of cholera and most of the diarrhoea cases occurred, was abandoned as a sleeping place for the men, who were transferred to the upper deck. For several days in succession, the boards were daily scraped, thoroughly washed with boiling water and washing soda, and subsequently disinfected with carbolic powder. The between decks were also fumigated by means of burning sulphur, and a healthy condition of the ship was endeavoured to be restored by every means possible.

From the 5th to the 14th of May, fever of a continued type occurred on board. During this period 3 gunners, 5 seamen and 18 camp followers (Native) were attacked. None of the cases proved fatal, though the symptoms whilst present were very severe. The daily average number of sick from 28th April to 15th May from all causes was, in the Royal Artillery—

Europeans	6.10
Natives	4.33
	<hr/>
	10.43
	<hr/>

The ship was put in quarantine on arrival at Suez on 21st May, but was released on the evening of the same day. On reaching Port Said on the 25th May it was reported to be in a healthy condition.

On the evening of the 28th April 1878, the Head Quarters of the F-2 embarked hurriedly on board the Clydesdale. Strength, Officers 4, Native Commissioned Officers and Gunners 86, total 90.

On the 29th of April, the men were inspected on board ship, and, with the exception of two slight cases of diarrhoea, no sickness was reported.

On the 30th instant, at 11 A.M., whilst at sea, a gunner was taken to hospital suffering from all the symptoms of malignant cholera. Immediate treatment was resorted to, the man progressed favorably, and was discharged for duty on 13th May.

On 1st May a second gunner was attacked at 8 A.M. His symptoms coincided precisely with those of the previous case; he too recovered and was discharged from Hospital on the 5th instant.

On 2nd May, a third gunner was suddenly seized with the disease; he recovered slowly, and was discharged well on the 15th.

On 4th May at 8-30 A.M., a Sergeant was seized with all the symptoms of cholera, in whom collapse set in most rapidly. From the first his case was regarded as a hopeless one; he never rallied, and died at 7 o'clock P.M. From this date cholera ceased, and with the exception of a few trivial cases of diarrhoea, there was no sickness amongst the men of the Artillery whilst on board.

Whilst on shore there were four seizures, including one native, all of which proved fatal. On board ship there were four seizures, of which three recovered and one died. In addition to the above, a seaman of weakly constitution was seized at 7 A.M. on the 6th of May, and died at 4 P.M. on the 7th.

124 Native followers embarked on the morning of 28th April. On the same evening, a bheestie was sent on shore suffering from cholera, result not known. On the 2nd May a ghorawalla, a bheestie and a native servant were seized simultaneously. The two former died on the following day, but the third recovered.

From this date, no other case of sickness amongst the men or native followers occurred.

The troops commenced to disembark on the 28th of May, and were disposed of as follows :—

At Fort Manoel, in tents—13th Bengal Native Infantry, 31st Bengal Native Infantry, 2nd Ghoorkhas, and 25th Madras N. I.

At St. Antonio, in tents—2 Batteries Royal Artillery, 1st Bombay Laneers, 9th Bengal Cavalry, 26th Bombay N. I., and 9th Bombay N. I.

It was found necessary to arrange for the conservancy of each encampment on a totally different plan. At Fort Manoel, where the tents were pitched

Conservancy. on rocky soil, close to the seashore, conservancy was managed by means of barges, 10 of which were in daily use. These barges were so arranged that the solid and liquid excrement were most carefully separated and deodorized with dry earth. Down the centre of each barge iron buckets, filled with dry earth, were deposited, and trowels, holding 1 lb., left for the purpose of covering the excrement with earth. The barges which had been in use during the day were towed out to sea at night, and after being thoroughly cleansed and disinfected, were returned to their places, others being supplied in the meantime.

Trench conservancy at St. Antonio. At St. Antonio the trench system of latrines was used, but owing to the rocky soil on which the troops were encamped, it became necessary to have pits sunk 6 feet deep and 3 feet wide for each Regiment. The sweepers attended twice daily, and covered the night-soil with dry earth, previously deposited for the purpose. When the pits filled to within a foot or two of the surface, they were covered in and abandoned and new ones dug.

Further measures adopted for ensuring a perfect system of sanitation. To ensure sanitation being the more effectively carried out, orders were issued directing one of the medical officers at the respective camps of St. Antonio and Fort Manoel to alternately act as weekly sanitary officer, in addition to his regimental duties, and report any special circumstance requiring immediate notice.

Disposal of dead bodies. Bodies of persons who died at St. Manoel were taken out to sea and buried, no burning being permitted; whilst at the camp of St. Antonio, a distance of six miles from the town of Vilettia, cremation was allowed to those who adopt this method of disposing of the dead.

Dooley bearers instructed in carrying doolies. As the greater portion of the bearers enlisted were totally untrained, a uniform system of instruction was established, and each medical officer in charge of a Regiment was directed to afford instruction, and see that the bearers were practised daily for one hour in putting doolies, dandies, and stretchers together, placing and removing wounded men, and carrying them without jolting. In time a commendable amount of proficiency was attained, and the bearers became a very useful set of men.

General Hospital for European and Native sick. Whilst at Malta, owing to the extreme heat in tents at St. Antonio, and the difficulty of treating cases of sickness amongst the European troops, it was arranged that all cases of a serious nature should be sent in ambulance carts for treatment to the European General Hospital at Malta.

For the treatment of similar cases amongst the Native troops, a general hospital, affording accommodation for 32 beds, was established at the Lazaretto Barracks, and a Medical Officer placed in special charge.

Extreme temperature during the day. The range of the thermometer during the day reaching 125° in the sun and 90° in the shade, it was recommended that the hospital marquees should be thatched over. This suggestion, which was at once complied with, served to reduce the temperature in tents considerably, and tended much towards the comfort and recovery of the sick.

Parasitic affection of the mouth. In the month of June a number of cases of inflammation of the mucus membrane of tongue and inside of cheeks and lips were brought to notice. The disease was particularly prevalent amongst the Native troops encamped at St. Antonio and Fort Manoel, and was believed to be produced by insufficient nitrogenous food. In several cases which appeared amongst the sepoys of the 25th Madras N. I., ulceration of the cornea was a prominent symptom.

Change of diet recommended. It was at once recommended that a bi-weekly issue of 8 oz. of meat be granted to the troops and native followers in lieu of 1 lb. of flour, and an equivalent of vegetables, such as onions and potatoes, granted instead of the sanctioned 4 oz. of dall.

Nature of disease. The disease on further careful microscopical enquiry was ascertained to be of parasitic nature (*oidium albicans*) wholly unconnected with any scorbutic affection, and which soon yielded to an improved diet and disinfecting local remedies.

It was a noteworthy fact that the 2nd Ghoorka Regiment, though encamped on the same ground as the other Regiments, had a complete immunity from this disease. This Regiment, from the time of its leaving Bengal, whilst at sea, and during its entire residence at Malta, had arranged privately for a bi-weekly issue of meat to the men.

Exemption of the disease amongst the men of the 2nd Ghoorkas.

The general health of the men, both Europeans and Natives, was good ; and, with the exception of some cases of fever, and ordinary diseases, no serious outbreaks of sickness occurred.

General health of men at Malta.

Orders were received on the 12th July for the departure from Malta of the I. E. Force to Cyprus, and it became necessary to arrange for the care of the sick, both European and Native, who were unable to accompany the Force. It was ordered that all the sick of the native portion of the Force be taken to Cyprus, as none could be allowed to remain in Malta ; whilst the Europeans who were unfit to accompany the Force, were accommodated in the station hospital at Valetta.

Departure of Troops to Cyprus.

On the 18th July, the Force re-embarked on board the transport ships for Cyprus, which port was reached about the 22nd instant. 1 Battery of Artillery, together with the 9th Bengal Cavalry, remained at Malta.

Re-embarkation of Troops for Cyprus.

Owing to want of space at Larnaka, the principal port, 1 Battery R. A., 1st Bombay Lancers, 26th Bombay N. I. were brigaded at Chiflick Pasha with two British Regiments of Infantry ; whilst at Larnaka itself, the 9th Bombay N. I. was encamped, the remaining Native Infantry Regiments, viz. 31st Bengal N. I., 13th Bengal N. I., and 25th Madras N. I. being located at different ports on the island.

As was arranged at Malta, a large upper storied airy building was selected as a general hospital for the use of H. M.'s British Troops, the lower portion of which was set apart for the reception of all serious cases occurring amongst natives.

Selection of a general hospital for European and Native sick.

During the month of August, after a heavy fall of rain, fever of a very severe intermittent type attacked some of the troops on the island. The European troops at Chiflick Pasha, who were exposed to excessive sun heat under canvas, and the Sappers and Miners, who had been for a considerable time subjected not only to exposure from heat, but great bodily exertion in damp places, suffered most. Between the 3rd and 7th August, the admissions were 33 or 22·44 per cent. out of a total strength of 147.

Fever at Chiflick Pasha and Larnaka.

To protect the patients as much as possible, the hospital tents were thatched over, and orders issued prohibiting work during the extreme heat of the day.

Precaution taken.

Owing to the large increase in the number of cases amongst the F-2 Battery, the encamping ground was shifted, and the immediate removal of all sickly men on board of one of the transport ships lying in the harbour, recommended. Marked benefit rapidly followed this change, and no case of fever occurred amongst any of those who had to quit the former encamping ground.

Removal of F-2 Battery.

On the 20th of August orders were received for the speedy re-embarkation and return of Troops to India, a few only remaining behind for special duty.

Return of Troops to India.

The greater portion sailed on the 22nd instant and arrived at Bombay harbour on 24th September 1878, after an absence of exactly five months.

Mortality of Troops, European and Native.

Of Europeans only 5 died—1 from heat apoplexy, 2 from cholera, 1 from Bright's disease, and 1 from gouty bronchitis.

Amongst Native Troops of both arms, Cavalry and Infantry, 14 casualties occurred. Of followers 9 died, 4 deaths occurring whilst on boardship, 4 during residence at Malta, and 1 at Cyprus.

Mortality of Native Troops and followers.

Appended is the scale of sea rations for cooking and non-cooking fighting men and followers, proposed by a committee assembled by order of the Major General Commanding, previous to departure from Cyprus.

Scale of sea Rations for the return voyage, for cooking and non-cooking Natives.

THOS. B. BEATTY,
Deputy Surgeon General, P. D. A.

SCALE OF SEA RATIONS (Non-cooking) allowed for Fighting Men and Camp Followers of all classes on the return voyage, from Cyprus to Bombay.

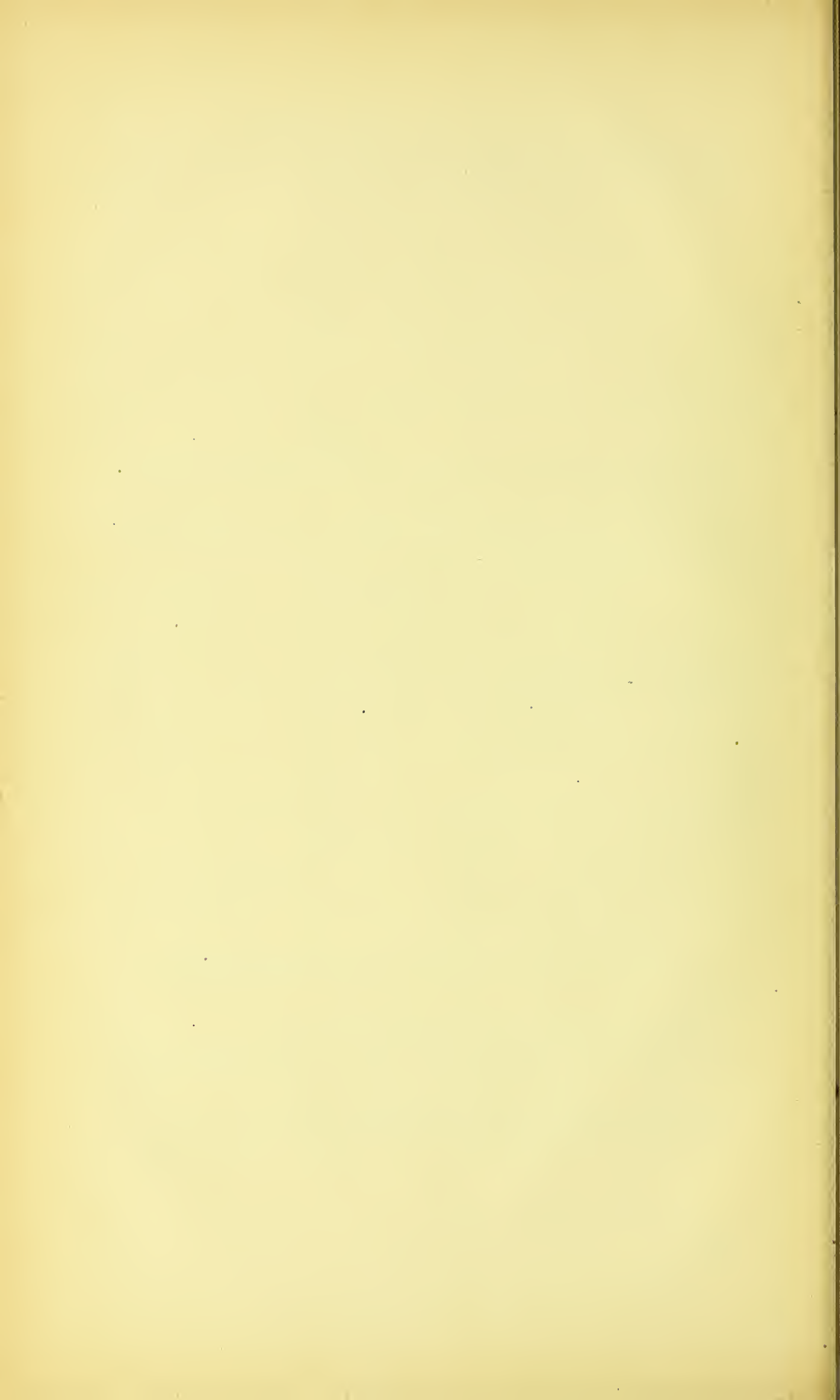
Articles.	Fighting Men and Followers.		REMARKS.
	lbs.	oz.	
Ghee	0	3	
Salt	0	$\frac{1}{2}$	
Garlic	0	$\frac{1}{8}$	
Tamarind	0	2	
Parched gram	0	8	
Powa	1	0	
Sugar	0	6	
Onions	0	2	

When Powa is not procurable, 4 oz. of raw gram and remainder of dried fruits, such as dates, raisins, figs, &c. may be substituted for it.

SCALE OF SEA RATIONS (Cooking) allowed for Fighting Men and Camp Followers of all classes on the return voyage from Cyprus to Bombay.

Articles.	Fighting Men and Followers.		REMARKS.
	lbs.	oz.	
Flour or rice	1	8	
Dhall, potatoes, or onions, on alternate days...	0	4	
Ghee.....	0	2	
Salt	0	$\frac{1}{2}$	
Garlic	0	$\frac{1}{8}$	
Firewood	2	0	
Turmeric	0	$\frac{2}{16}$	
Black pepper	0	$\frac{1}{8}$	
Chillies	0	$\frac{2}{16}$	
Coriander.....	0	$\frac{2}{16}$	
Cummin	0	$\frac{1}{8}$	
Sugar	0	2	
Fresh mutton every other day	0	4	Fighting men only.

1. No meat rations to be issued to camp followers.
2. Dried fish may be issued to Madras Troops, when meat cannot be procured.
3. Biscuit may occasionally be issued to Madras Troops, instead of flour or rice, when necessary.
4. Limejuice and tamarind to be considered as medical comforts, and issued on recommendation of medical officer, with a proportionate amount of sugar.
5. As fresh potatoes in large quantities are liable to decay, a proportion, say $\frac{1}{3}$ of preserved potatoes in lieu, calculating 4 oz. of preserved potatoes to 1 lb. of fresh, should be taken on board.
6. Compressed vegetables should be given out in the proportion of 2 oz. to 1 lb. of fresh potatoes, when preserved potatoes are not procurable.



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[The Regiments are placed as they stood in the Army List on the 1st July 1878.]

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MEDICAL AND SANITARY REPORT

OF THE

NATIVE ARMY OF BOMBAY,

FOR THE

YEAR 1878.

(The Regiments are placed as they stood in the Army List on the 1st July 1878.)

PRESIDENCY DIVISION, ADEN, AND BOMBAY MARINE.

Average Strength present during the year	4,633
Average Daily Sick per cent. to the Average Strength Present ...	3·8
Ratio of Mortality per cent. to the Average Strength Present	0·8

H. M.'s 1st Regiment Light Cavalry.

MALTA.—In Medical charge of Surgeon Major COLSTON and Surgeon E. W. YOUNG.

Average Strength	488	Deaths in Hospital	2
Do. Present	479	Do. out of do.....	3
Admissions	1,039	Invalided	32
Daily Sick.....	17·9	Sick Leave	7

Years.	Stations.	Rate per cent. to average strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Poona.....	118·1	3·4	.....
1876	Do.	111·7	3·9	0·7
1877	Do.	121·1	3·4	0·4
	Average...	117·0	3·6	0·4
1878	Poona, Malta and Cyprus...	216·9	3·7	0·4

1. The regiment embarked for Malta the first three days in the month of May last; from Malta it was sent on the 18th July to Cyprus, here it remained until the end of August, when it returned to Bombay and Poona. On the 11th of November it marched out of Poona, *en route* for Neemuch, where it arrived on the 3rd of January 1879.

2. They are in much the same condition as last year, the court yards around the huts have been for some time considered objectionable, affecting ventilation, and are a cloak to dirty habits. The drainage is chiefly natural, superficial drains lined with stone exist between the lines of each troop, and the drainage from each hut flows into these.

The lines and their surroundings: present condition, hygienic and otherwise.

3. The lines have been kept clean and the latrines regularly cleaned out twice daily; they are well situated to the east of the most northerly line of huts, and distant 140 yards. The excreta are removed daily by the conservancy carts to the cantonment manure ground.

Conservancy.

4. Is very abundant, and is received direct from the Kurruckwasla waterworks through pipes; the water is not clean, but is reported to be wholesome. There is a good supply of pure well water also, but I am told the sowars and families for the most part prefer the former.

Water supply.

5. The supply of provisions in the bazaar is good and plentiful, and vegetables easily procured; prices remained high after the famine. A black blouse is now worn on parade instead of the stable jacket formerly in use, the men are pleased with the change and say they are able to move about better in them than in the old tight stable jacket. The boots the men wear are in my opinion unsatisfactory. During the march from Poona to Neemuch, there were no less than 42 men admitted into hospital or were unable to ride from shoe-bites. The price of these boots is about Rs. 5 a pair, and they are as a rule badly made and ill fitting. For a little more money a better boot could be procured, and the men should always be forced to wear some sort of sock.

Food and clothing.

6. The duty is for the most part light, the men getting on an average $13\frac{1}{2}$ nights in bed. A class is held twice a week for the purpose of teaching recruits gymnastics.

Duties, exercise and amusements; their effect on health.

7. The hospital is an excellent one, and was very fully described in the report for the year 1874; it will accommodate 29 patients within the walls, but more accommodation has been required during the last months of the year, owing to the number of ague cases admitted; the excess have been placed in the verandahs, the greatest number at one time in hospital having been 60. The dry earth system has been carried out in the hospital latrine.

Hospital and its immediate surroundings; present condition, hygienic and otherwise.

8. The general health of the Regiment for the year has been good. In Malta there were several admissions for fever, generally of a mild intermittent type, and a few cases of dysentery, some of which were severe, but none ending fatally. The high temperature and exposure the men were subject to would account for this sickness, their tents not supplying a sufficient protection from the sun. In Cyprus for the first fortnight or three weeks, the health of the Regiment was good, and while men in the European regiments were suffering in large numbers from fever and dysentery, our men were exempt; later, however, our men suffered a good deal from remittent fever with congestion of the liver and severe headache, and these cases were slow to recover, becoming anæmic, and having a very characteristic malarial aspect. In a great many instances the sea voyage from Cyprus to Bombay improved this. But on my return, Surgeon Major Colston having previously arrived with the head-quarters of the regiment, I found no less than 60 men in hospital, the majority suffering from anæmia and what was called Cyprus fever. I should mention that the men suffered from the affection of the mouth and tongue on arriving at Malta, which was so fully reported upon at the time by the Medical Officers in charge of regiments suffering from the disease.

General health and physique.

9. The influence of the Deccan climate on the Regiment during the past $7\frac{3}{4}$ years appears to have been favourable, and the sickness and mortality low.

Influence of climate or local circumstances on health.

10. Fever—694 admissions, of which 3 were of the remittent type. Cholera—one case, which recovered. Rheumatic affections—20 cases, of which 1 was acute rheumatism, 13 chronic rheumatism, and 6 lumbago. Syphilitic affections—10 admissions, of which 6 were primary syphilis and 4 secondary syphilis. Diseases of the nervous system—3 admissions, 1 for neuralgia, 1 hemiplegia (left),

Details of treated.

and 1 hyperæsthesia. Diseases of the eye—18 cases of ophthalmia have been admitted. Diseases of the lungs—17 cases, of which 2 were bronchial catarrh, 10 chronic bronchitis, 2 asthma, and 3 pneumonia. Diseases of the digestive system—120 cases, of which 2 were tonsillitis, 1 dyspepsia, 85 dysentery, 23 diarrhoea, 2 cholera, 5 jaundice, and 2 gumboil. Dysentery and diarrhoea principally occurred during the stay of the Regiment in Malta and Cyprus; most of them were mild cases, only one proving fatal. Diseases of the urinary and generative system—10 cases, of which 5 were gonorrhoea, 3 bubo, 1 suppression of urine, and 1 orchitis. Diseases of the organs of locomotion—3 cases, of which 2 were necrosis and 1 periostitis of tibia. Diseases of the cellular tissue—3 cases, of which 1 was guinea-worm and 2 abscesses. Diseases of the cutaneous system—30 cases, of which 1 was herpes, 2 eczema, 4 ulcers, 18 boils, 1 whitlow, and 4 scabies. Wounds and accidents—98 cases admitted during the year, chiefly horse kicks and shoe abrasions.

11. Two deaths in hospital, one remittent fever, and one dysentery. One case, handed over to the 8th Regiment N. I. Hospital on the Regiment proceeding to Malta, died; another, handed over to the 5th Regiment N. I. Hospital, Poona, on the regiment leaving for Neemuch, also died. One Duffadar sent on sick leave from Poona, died while away, from heart disease. (Three Mussulmans, two Hindoos.)

Epidemics.

12. One sporadic case of cholera.

Vaccination and re-vaccination.

13. Vaccination and re-vaccination were carried out throughout the year carefully.

14. 32 men have been pensioned—20 physically unfit, 6 worn-out and debilitated, 2 syphilitic taints, 1 asthma, 1 hyperæsthesia, and 2 varicose veins.

Invaliding and its causes.

Requirements and recommendations.

15. No suggestion to make on my limited experience of the Regiment.

Special observations, new experience in treatment, sanitary, &c. &c.

16. None.

H. M.'s 9th Regiment N. I.

MALTA.—In Medical charge of Surgeon-Major P. W. COCKELL.

Average Strength	737	Deaths in Hospital	7
Do. Present.....	691	Do. out of do.	2
Admissions	842	Invalided	64
Daily Sick	20·1	Sick Leave	13

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Baroda	74·2	2·6	1·6
1876	Do.	68·2	1·8	0·9
1877	Do.	71·2	2·2	1·9
	Average...	71·2	2·2	1·5
1878	Bombay, Malta and Cyprus.	121·8	2·9	1·0

1. The 9th Regiment remained in Bombay for about eight months during the year 1878, viz. from 1st January to 30th April, and from 10th September to 30th December 1878, and for the rest from 1st May to 9th September 1878 at Malta and Cyprus.

Location and movement.

The lines and their surroundings; present condition, hygienic and otherwise.

2. The lines are situated between the Crawford Market and the Carnae Bunder, about ten minutes' walk from the Hospital.

The vicinity is thickly populated on the North side, but on the South there are principally sheds and buildings connected with the G. I. P. Railway. On the East is the Carnac Bunder, on the West the Crawford Market. I can only endorse Deputy Surgeon General Hunter's remarks at page 3, Bombay Army Medical Report of 1876.

The lines consist of 10 blocks of pendals facing North and South, each composed of three blocks of huts and one detached for the residence of the Native Commissioned Officers.

3. One latrine divided into two parts, each containing 28 seats, 14 each side, 1 for the women and 1 for the men. The latrine is situated to the North-East of the Lines, at a distance of only 48 feet from the last block of pendals. It is regularly flushed, and the filth runs into the pumping station, whence it is pumped into the sea, about a quarter of a mile off. The seats are too few for the number of inhabitants of the lines, which, with the addition of the Detachment 8th Regiment, cannot be well under 2,000 men, women and children.

4. Vehar water is supplied to the troops but not to the sick in hospital; the water has never been laid on, but it has lately been a cause of correspondence between the Medical Officer and Commanding Officer and authorities concerned; the amount is ample for drinking and washing purposes. It is collected in four large iron tanks, each holding 700 gallons of water.

5. With regard to clothing there is nothing in addition to last year's remarks to add. Food in abundance, but somewhat dear. The men however received the usual grain compensation.

6. The duties in Bombay were very hard for the men of the Regiment, the number of nights in bed being only 4.5.

Hospital.

7. This has been described and reported upon in pages 2 and 3, Army Medical Report Book for 1876.

8. The health of the men and physique have been very fair since the Regiment returned from Malta and Cyprus. Sixty-four of the oldest and most worn out men have been invalided during the year, but the recruits are a very fine body of young men.

9. The health of the Regiment was certainly not improved while it was stationed at Malta and Cyprus. The men suffered very seriously. Diarrhœa and dysentery were very common. The change to Bombay had a beneficial result. The admissions to hospital do not give an adequate idea of the health of the Regiment, for, as a rule, the men avoid the hospital unless seriously ill. Trifling ailments they pay little heed to, and by so doing bring about an impaired state of the general health.

10. The principal causes of sickness were, eruptive fevers, malarious fevers principally of a quotidian type, rheumatic, syphilitic, and scorbutic affections; diseases of the nervous system, eye, heart, and lungs; diarrhœa, dysentery, &c. &c.

11. Seven deaths in hospital during the year, their causes being remittent fever 1, dysentery 3, diarrhœa 1, syphilis secondary 1, pleurisy 1. There were two deaths out of hospital at the dépôt at Poona, when the Regiment was at Malta.

Epidemics.

12. None.

Vaccination.

13. 11 children have been primarily vaccinated during the year.

14. 64 men were invalided during the year, and for the following causes:—ague 1, rheumatics 1, eye disease 3, disease of the heart 1, disease of the lungs 10, dysentery 2, ulcers 1, old age and debility 42, other diseases 3.

Requirements and recommendations.

15. The only need is the supply of Toolsee water to the hospital, which has been promised by the Brigadier Commanding at Bombay.

Special observations, new experiences in treatment, sanitation, &c.

16. There are no special observations, and the only remark on sanitation is the want of supply of pure drinking water to the hospital, which has been already alluded to.

H. M.'s 26th Regiment N. I.

MALTA.—In Medical charge of Surgeon Major G. Y. HUNTER and Surgeon H. EARLE.

Average Strength	706	Deaths in Hospital	9
Do. Present.....	694	Do. out of do.	7
Admissions	1279	Invalided	54
Daily Sick.....	25·4	Sick Leave	21

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Surat	201·9	5·6	1·7
1876	Poona	132·5	5·1	0·8
1877	Do.	134·2	4·0	0·7
	Average...	156·2	4·9	1·1
1878	Poona, Malta and Ahmedabad.	184·3	3·6	1·3

1. The first four months of the year the regiment was at Poona, and from the 2nd May to the 12th of September, it was engaged in the Malta expedition. Location and movements. After the regiment disembarked at Bombay on the return from Cyprus, the head-quarter wing proceeded at once to Ahmedabad, the left wing going to Tanna. There were no other movements of the Regiment during the year.

2. The lines occupied by the regiment while at Poona were bounded on the north by the lines of the 8th Regiment N. I., which being in close proximity, do not admit of that free ventilation which is necessary; on the south side they are bounded by the lines of the 5th Regiment N. I.; on the east by the general parade ground, a large open plain, and on the west by a smaller open space, through which runs a large nullah, carrying away all the rain water during the monsoon. The ventilation east and west is excellent and is all that is desirable for the comfortable location of a native regiment. The lines being erected on elevated ground, with a good incline towards the western nullah, every facility is afforded in the way of natural drainage. The lines occupied by the regiment while at Ahmedabad are situated N. W. of the cantonment, they face S. E., and are in close proximity to the bazaar. They are small, low and dark, and in the rains are damp and unhealthy, due to faulty construction.

3. At Poona there are two latrines, situated about 183 yards west of the lines and to windward of them. The night-soil is removed early in the morning by means of two iron tank-carts to a place beyond camp limits, four miles distant to the east. The waste water from the sepoys' huts and the bathing places is carried by small channels into open drains running along the sides of the lines, and by them into a large nullah to the west of the lines. The rain water also runs off in the same manner.

In Malta, while on the expedition, a latrine trench, about twenty yards long and four or five feet deep, was dug. This was situated about 50 yards east of the camp, and was medically inspected night and morning. This trench continued in use for about ten days, when another such like trench was dug at the back and parallel to the former, about four or five yards distant. In Cyprus the same conservancy arrangements were carried out. In Ahmedabad there were three latrines, situated 250 yards west of the lines; the night-soil was removed early every morning, about two miles beyond camp limits.

4. At Poona, good and abundant. No wells in camp have been used for drinking purposes since the introduction of Kurruckwasla water, which is supplied by means of three stand-pipes running into the masonry reservoirs to the S. W. of the lines. The waste water from these runs into the regimental gardens, and after irrigating them, the superfluous water flows into the nullah adjoining the lines.

In Malta and Cyprus the water supply was good and abundant and was drawn from wells close to the camp. In Ahmedabad there were six wells from which a good and

abundant supply of water was drawn—four west of the lines, one east of the lines, and one just outside the hospital compound, about 20 yards distant.

5. The grain sold in the Poona as well as at the Ahmedabad market was very good and equally cheap. There is no alteration in the sepoy's dress, with the exception that when the Regiment started on the Malta expedition, each sepoy was provided with a pair of white cloth gaiters.

6. The duties this year of the sepoy were, comparatively speaking, light, a sepoy at Poona being on guard duty once every five days, while at Malta and Cyprus once every ten days, while at Ahmedabad once every three or four days. The duties performed by the sepoys have had no visible bad effect on their health. There is no recreation for the sepoys besides the regimental gymnasium; a few seem to be well up in weaving, sewing, carpenter's and blacksmith's work.

7. The hospital at Poona is situated about 400 yards from the lines and consists of two separate buildings, one of which is thatched and contains a large ward 96 feet long and 22 feet broad, and is well adapted for the purpose required. The other hospital building contains two small wards set aside for special cases, and although well built, the ventilation is defective. The head subordinate's quarters and the guard room are also thatched and in fair condition. There are two latrines attached to the hospital, they are built of bamboo slips and have mud floors. As last year (although special attention was called to this point) no provision has been made for keeping separate the solid excreta from the urine, consequently the greatest difficulty is experienced in keeping the latrines clean. The earthen pots intended to hold the urine often tumble down and so tend to keep the floor always damp, which is most objectionable. The hospital has a large and spacious compound. In Malta and Cyprus double pole Bengal tents were used for the sick. The following were the dimensions of a single tent—height 10 feet, length 31 feet, breadth 18 feet. Each tent was supposed to accommodate about 50 men. In Malta one such tent was used by the sick, in Cyprus two. At Ahmedabad the hospital is pukka built and tile roofed, it contains two fair sized wards with brick floor, also two small rooms, one used as a dispensary, the other for office work, and in addition to these there are still two smaller rooms, one used as a bath-room for the men, the other for sick women and children. The ventilation of the hospital is fair and is chiefly carried out by ordinary means, such as doors and windows placed opposite to each other; there are also artificial outlets in the roof of the building. There is one latrine for nine patients; this is situated behind the hospital, and is well away from all water supply. It is pukka built, tile roofed, brick floor. These latrines were always kept very clean; there were separate receptacles for urine and solid excreta. There is a large well situated just outside the hospital compound, from which the patients receive a good and abundant supply of water. In my opinion the hospital is too much surrounded by trees which in the very hot weather would tend to stagnate the air and so make the hospital close, muggy, and unbearable to the patients; otherwise there seems no complaint to be made of the hospital or its surroundings.

8. During the first four months of the year the health of the regiment was good. At Malta there was a good amount of sickness amongst the sepoys, many of them being laid up with dysentery and scurvy. Very few cases of fever, daily average of sick being 20. Scurvy cases were not admitted into hospital; they were treated as outpatients. At Cyprus the daily average of sick in hospital was 2·12, most of these being fever cases. There were only one or two cases of dysentery; no scurvy, this being due to the plentifulness as well as the cheapness of the fruit. On the voyage from Bombay to Malta, the health of the sepoys was good, but on the return journey from Cyprus to Bombay the health of the regiment was very bad, many of the men suffering from a severe form of fever which they had contracted at Cyprus. Daily average of sick in the hospital was 57·6. At Ahmedabad the health of the regiment showed marked signs of improvement.

9. The dry climate of Poona and Ahmedabad seems to have agreed with the men, but from the evident amount of sickness contracted at Malta and Cyprus, especially the latter, these places did not suit the sepoy's health.

10. The admissions from ague were 795, 446 more than the previous year. This great increase appears to be entirely due to the immense number of fever cases admitted into the hospital on the passage from Cyprus to Bombay, at this time the daily average of sick being 57·6. Small doses of quinine were given to these patients; this was combined with chiretta. No cinchonidine or cinchona

mixed alkaloid obtainable. The admissions from respiratory diseases were 63, viz. bronchitic catarrh 35, pneumonia 3, asthma 3, bronchitis 22. Of the diseases of stomach and bowels there were 137 cases, diarrhœa 70, dysentery 93, colic and dyspepsia 10. There were 46 admissions from venereal diseases; out of this number 10 were cases of simple gonorrhœa, most of which were contracted at Poona. The remaining cases were syphilitic. Of the other cases admitted there is nothing worthy of note.

11. There were 9 deaths in hospital, from the following causes:—Two remittent fever, one of which was complicated with aneurism of the arch of the aorta, one bronchitis, one pneumonia, three from diarrhœa, one from dysentery, one from ague, and one in the lines from aneurism of aorta.

Mortality and its causes. Epidemics. 12. There was one case of cholera which recovered.

Vaccination and re-vaccination. 13. None performed.

14. Fifty-four men were invalided, two asthma, two chronic bronchitis, one rheumatism, one deafness, two defective vision, forty-four from general debility, one hepatitis, one injury to knee joint.

Invaliding and its causes. 15. At Malta the medical officer ordered two extra tents for the sick (each tent to hold 20 men) and to be thatched with a grass chupper, also an extra latrine with four sets; this also was for the use of sick in hospital.

Requirements and recommendations. The medical subordinates have given satisfaction.

16. As far as my short experience goes as regards the cinchona alkaloid, I find that when it is given in doses of from grains vii. to x., it has no effect whatever in warding off any severe attack of intermittent fever; even when first given in a large dose of grains xx. and repeated afterwards by grains x. every three hours, it produces, as far as I have had opportunity to see, no beneficial effect in severe cases of fever. The cinchona alkaloid appears to me to act only as a very mild febrifuge.

Special observations. While the Regiment was at Cyprus, the sepoys were employed in making roads; this work in some instances appears to have had a prejudicial effect on the men's health.

H. M.'s Aden Troop.

KHOR MAK SAR.—In Medical charge of 1st Class Hospital Assistant GANGAJI RAMJI.

Average Strength	100	Deaths in Hospital .....	...
Do. Present	94	Do. out of do.	1
Admissions	192	Invalided	4
Daily Sick.....	4.2	Sick Leave	4

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875.....	Khor Maksar.....	207.3	6.1	.....
1876.....	Do.	176.5	6.8	0.1
1877.....	Do.	159.0	4.0	.....
	Average...	180.9	5.6	.....
1878.....	Khor Maksar.....	204.2	4.4	.....

1. The head-quarters has been into the interior twice on duty during the year.
2. The line is situated at the western side of the hospital, site is good, and the whole of the pendals have been in good repair during the year.
3. There is one latrine attached to the hospital; it is kept very clean and the night-soil is removed three times a day.
4. Two gallons of condensed water and 3 gallons of Shaik Othman water (brackish); both qualities are good of their kind and the quantity is deemed sufficient.
5. Rations are not issued to men of the "Aden Troop." Khakee or white clothing for the hot, and cloth for the cold season, are well adapted for the climate.
6. Ordinary Guard duties and patrolling in the interior. The men practise athletic sports and sword exercise on holidays and twice a week on Tuesdays and Thursdays, which appears to do them much good, and improves their health.
7. An excellent hospital is in use with accommodation for 12 patients, and it gives a cubic space for each patient of 3212·3 cubic feet. The accommodation is good. The Deputy Surgeon General on his late inspection reported as follows:—

"The hospital and surroundings are in good order, and the new asphalte flooring is a great improvement. The Hospital Assistant being a married man, requires more accommodation than his predecessor, and now occupies two rooms, one of which was formerly used by the dooly bearers. The latter now occupy what was formerly the cook-room, and what was formerly the bath-room is now used as a cook-room, the result being there is no bath-room. This cannot be remedied unless second class servants' houses are built. At present the dooly bearers are accommodated as above, and in a compartment originally intended for but unfitted for a dead-house. The other servants, a goorgah and a sweeper, live where they can."
8. With the exception of the large number of admissions in the months of April and May 1878, the general health of the Troop during the year has been good and fit for active service.
9. The climate is very healthy, and the prevailing winds N. E. and S. W. at the different seasons of the year, render the atmosphere agreeably cool and pleasant, except in the hot months, when it is sometimes very close and oppressive.
10. The number of men treated in hospital during the year was 194, being an increase of 32 on the year preceding: this increase occurred in the months of April and May, and is attributable to the Troop having proceeded on service into the interior early in April, the weather being then hotter than usual.
11. No deaths occurred in the hospital or in the lines; but 1 sowar died of chronic hepatitis on sick leave and shortly after leaving Aden.
12. There has been no epidemic during the year.
13. Four children have been successfully vaccinated during the year. No re-vaccination has been performed.
14. Three men were invalided—1 sowar from chronic rheumatism, 1 lance duffadar from scurvy and general debility, and 1 farrier from keratitis; one sowar was discharged with gratuity on account of enlarged spleen and general debility.
15. Quarters for the second class hospital servants are required, as noted by the Deputy Surgeon General.
16. I have no remark to offer under this heading, except that the sanitation would be improved by the erection of quarters for the second class hospital servants.

H. M.'s 17th Regiment N. I.

SURAT.—In Medical charge of Surgeon-Major G. F. H. BROWN.

Average Strength	700	Deaths in Hospital	5
Do. Present	668	Do. out of do.	3
Admissions	1,130	Invalided	26
Daily Sick	24·7	Sick Leave	24

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Poona.....	120·2	3·4	0·4
1876	Surat	189·0	5·6	2·4
1877	Do.	210·9	4·2	0·8
	Average...	173·4	4·4	1·2
1878	Surat	169·1	3·7	3·7

1. The Regiment has been stationed at Surat the greater portion of the year. In course of relief it was ordered to Dharwar, and left Surat in three Detachments on the 3rd, 15th of December, and 3rd of January respectively.

Location and movements.

2. On this head I may confine myself to the remark that the Regiment and Lines were specially inspected by Deputy Surgeon General Moore in September 1878, and that I believe the lines were condemned by him as badly situated, badly ventilated, and badly constructed. It is therefore hardly necessary for me to say more than that I fully concur in that opinion. In strong contrast to the lines at Surat are those at this station, Dharwar, where the lines completed in 1875, on the standard plan, appear all that is desirable as regards locality, ventilation and construction.

The lines and surroundings; present condition, hygienic or otherwise.

3. The latrines at this station, Dharwar, are on the trench system, and appear to answer the purpose well. They are situated to the rear of the lines, and in good position as regards prevailing winds. Sweepers are employed to keep the lines clean.

Conservancy.

Water supply.

4. The water supply at Dharwar is good and sufficient, and is obtained from wells.

5. At Surat the supply of food was not as good as usual. The famine in other parts of India and a most unusual heavy fall of rain, contributed to this: the rain was so heavy and continuous that the crops rotted in the ground.

Food and clothing.

90 inches of rain fell during the year, the average being about 36 inches. At Dharwar there seems to be a plentiful supply of rice and some of the common grains, but wheat is scarce and very dear.

As regards clothing, the only change introduced has been the institution of puggaries for the Sepoys and Native officers; and in this Regiment socks have been introduced, with the most marked benefit as regards blistered feet, as was amply proved on the march up from Vingorla to Dharwar, when not more than two or three cases occurred in the whole regiment.

Duties, exercise, and amusements, and their effects on health.

6. The duty has been light throughout the year. The recreative amusements of the men are of their own invention.

7. The hospital at Surat was an upper storied bungalow, well arranged, and ventilated, but too close to native villages. That at Dharwar is, I may say, faultless with the exception of its mud floor; it is well situated, no native village within a mile, and has ample accommodation, and is well ventilated.

The hospital and its surroundings, hygienic and otherwise.

8. The Regiment was stationed three years at Surat, and during that period the men very much deteriorated in health. They suffered much from malarious fever; the climate was very enervating; the water bad, and the lines ill constructed. The men are however decidedly improved; the march up and this salubrious station giving them a more healthy appearance, and, as will be seen, the sickness has diminished.

General health, physique, &c.

9. The rainfall for the year at Surat was 90 inches, a heavy continuous downpour, Influences of climate or local with hardly a break. This is much above the average, which circumstances on health. is 36: it did not appear however to have any special prejudicial influence on the health of the men.

10. The total number of admissions from all causes was 1,130, a considerable decrease from last year, which was 1,501. Of these 707 were from Details of treated. malarious fever, for although in the summary 46 cases of febricula are given, they come under the head, I think, of malarious fever, being cases of fever of short duration without any marked premonitory prolonged rigour; so that taking these cases as all of malarious origin, and comparing them with last year, there is a considerable decrease. In 1877 the admissions from malarious fever were, ague 676, febricula 409, remittent fever 16, being a total of 1,101, so that I am justified in my previous assertion that the general health has improved. Dysentery and diarrhœa have as usual prevailed, dysentery causing 44, and diarrhœa 56 admissions. From cholera there were 3 admissions and 1 death. The remaining diseases call for no special remark, being principally rheumatism and ulcers. The former were mostly candidates for the Invaliding Committee, and the causes of ulcer were partly those of blistered feet, and partly from other causes, the socks before alluded to not having been introduced until late in the year. As regards treatment there is nothing new or special to remark; the cinchona alkaloid has been largely and successfully used in the treatment of malarious fever.

11. 5 deaths occurred in hospital, 3 out of hospital. Of those in hospital 2 were from Mortality and its causes. remittent fever complicated with acute bronchitis, always particularly fatal complication, 1 from remittent fever, and 1 from ague complicated with acute bronchitis, and 1 from cholera. Of the deaths out of hospital 1 died suddenly on the first march out from Vingorla from disease of the heart, valvular and hypertrophy. 2 died when absent on medical certificate, 1 from anæmia, the other from disease of the liver.

Epidemics. 12. Cholera and small-pox prevailed in the neighbourhood, but not in an epidemic form.

Vaccination and re-vaccination. 13. Vaccination has been successfully carried on and the lymph has been good.

14. 26 men were invalided during the year, and for the following causes: old age 16, Invaliding and its causes. scurvy 3, eye diseases 2, diseases of the lung and spleen and rheumatism 1 each, and other diseases 2.

15. In the Sanitary Sheet and Report I have already mentioned that on arrival at Dharwar I was advised by the Medical Officer 12th Regiment Requirements and recommend- N. I., Dr. Boyd, not to treat any cases of ulcer, wound or ations. abrasion in the hospital, as he found all these cases took an unhealthy action, which he attributed to infection from the mud floor. We both recommended that the floor of the hospital should be removed to the depth of about 6 inches, and fresh earth applied; this was done, and since that I have not had any trouble with any cases; before this was done I treated them in tents.

One case of ulcer was shown me by Dr. Boyd, which presented a peculiar glazed appearance with absence of all granulation, which I thought looked like scurvy. There were however no other symptoms of scurvy about the man, nor had Dr. Boyd observed any in other cases.

Special observations, experiences of treatment, sanitation, &c.

16. None.

H. M.'s 21st Regiment N. I.

BOMBAY.—In Medical charge of Surgeon Major M. M. MACKENZIE.

Average Strength	700	Deaths in Hospital	9
Do. Present.....	693	Do. out of do.	6
Admissions	1,042	Invalided	47
Daily Sick.....	29.6	Sick Leave	12

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Bombay.....	90·1	3·2	0·9
1876	Do.	80·6	2·5	0·4
1877	Do.	82·8	2·5	1·1
	Average...	84·5	2·7	0·8
1878	Bombay	150·4	4·3	1·3

1. The head-quarters and main body have as usual been stationed in Bombay, besides furnishing the usual detachments in course of annual relief to the Persian Gulf and Indian Government steam vessels as per subjoined details:—

Bagdad.....	16
Bushire	25
Bassadore	12
Gwadur	36
Jask	70
I. G. S. S. Dalhousie	8
Ditto Abyssinia	8
Ditto Magdala.....	8

The detachment of 70 strong at Jask was a new call on the Regiment this year. A company was also sent in April to Bassadore to strengthen the Detachment, which was returned on the 31st December, being no longer required there.

The lines and their surroundings, present condition, hygienic, and otherwise.

2. The same as reported in previous year.

Conservancy.

3. The same as reported in previous year.

4. From Vehar by means of cast iron pipes for drinking purposes, and from wells in and near the lines for washing and other purposes. The quality of the Vehar water has been excellent and the supply is abundant.

Water supply.

5. The same as reported before. The Kattywar and Deccan famine had the effect of considerably raising the price of rice, bajri, and other grains which form the staple food of the sepoys throughout the year. Notwithstanding the good fall of rain throughout the last monsoon, and the subsequent report of favourable crops in the mofussil, this high rate of prices is still maintained in the local market, and the sepoy's food is not yet procurable at its usual price.

Duties, exercise and amusements; their effects on health.

6. Not heavy, the men on an average get $4\frac{1}{2}$ nights in bed during the week at head-quarters.

The amusements of the men are principally of their own invention. A few young sepoys compete for the prizes at the annual running, jumping, climbing and sack races on the Esplanade.

Hospital and its immediate surroundings, present condition, hygienic, and otherwise.

7. The hospital accommodation has been sufficient, and there was no overcrowding; the hygienic condition of the hospital and its surroundings the same as reported before.

8. The general health and physique of the men has been on the whole fairly good. The Regiment is recruited from two classes of men, viz. Mahomedans from the N. W. Provinces and low caste Hindoos, called Purwarees, and Moolchies from Konkan.

General health and physique.

The following table gives the number of admissions, and percentage of sick to strength during the year at the head-quarters and detachments mentioned below :—

	Head- quarters at Bombay.	Bagdad.	Bushire.	Bassadore.	I. G. S. S. Dalhousie.	I. G. S. S. Abyssinia.	I. G. S. S. Magdala.
Admissions.....	352	27	12	647	3	1	None.
Percentage of admis- sions to strength ... }	61·9	207·7	52·2	995·4	37·5	12·5	None.

9. Throughout the year the health of the men of the Detachment at Bassadore greatly deteriorated from the effect of the climate and malarious fever. Influence of climate or local circumstances on health. The main reasons for the increased sickness over the preceding year is attributable in my opinion to the greater number of men employed now in the Persian Gulf, from whence many return ill and generally debilitated, requiring medical aid, sick furlough, or invaliding at last.

10. Including the sick of detachments in the Persian Gulf, the total number of cases admitted during the year was 1,042, which with 18 cases remaining from the preceding year, gives a total of 1,060. Details of treated. The principal cases of sickness have been as usual, fevers, to which ague contributes 640 admissions, out of which 125 were at head-quarters and 495 at the Bassadore detachment, the remaining 20 were furnished by the other detachments; 12 cases of remittent fever of a low and not infrequently typhoid type were admitted. Next in order of frequency comes rheumatic and syphilitic affections, 40 of the former and 27 of the latter. I regret to say syphilis of a bad type is exceedingly prevalent in Bombay, and the men of the Regiment who resort to the town have suffered very severely. Not only have the primary attacks been of the sloughing variety of sore, but nearly all the cases have been affected in quick succession with secondary symptoms. Eruptive fevers give only three admissions, viz. one small-pox, one chicken-pox, and one measles; the case of small-pox was transferred to the J. J. Hospital for treatment. Scurvy gives 12 admissions, all furnished by the detachments serving in the Persian Gulf. Local diseases contribute 236 admissions, of which skin diseases are most frequent. Scabies gives as many as 33 admissions. Diseases of the more important organs, such as eye and lungs, have not been infrequent, 19 of the former and 22 of the latter have been treated. Lung disease, preceded as it often is by remittent fever of a low type, has been found difficult to combat, requiring a free administration of stimulants and nourishment. Diseases of other important organs as the liver have not been absent, and diseases of the bowels, including diarrhoea and dysentery, have furnished 31 of the former and 21 of the latter; the remainder of this class of disease calls for no remarks.

11. During the year under report there have been 15 deaths, 9 more than last year. Of these, 9 were at the head-quarters and 3 on duty in the Persian Gulf, 2 on sick leave, and 1 on furlough. Mortality and its causes. One death occurred under the head of ague: the man was a drum major in the Regiment, of intemperate habits, who died suddenly during the course of short treatment, of bursting of an abscess in the peritoneal cavity, as discovered by autopsy. One from remittent complicated with lung affection, one from syphilis of a bad type complicated with scurvy and pneumonia, two from chronic bronchitis, one from dysentery contracted in the Persian Gulf, two from hepatitis, terminating in abscess, which finally proved fatal, one from peritonitis arising from the presence of long worms in the intestinal canal. Three on duty in the Persian Gulf, and one on furlough—their diseases are unknown—one from bronchitis and one from scrofula; both were on sick furlough.

12. Although there have been many cases of cholera and small-pox during the year in the native town, only one sepoy was attacked with small-pox: the case was transferred to the J. J. Hospital for medical treatment. Epidemics.

13. Thirty-nine children have been primarily vaccinated during the year; of these 37 were successful and 2 unsuccessful. Vaccination and re-vaccination.

14. Forty-seven men were invalided by the Annual and Special Invaliding Committees; of these 10 were recommended by the Commanding Officer as old and worn-out men unfit for further service; the rest were Invaliding and its causes.

presented by me—one from fracture of the right humerus. One day in the afternoon while lying down and attempting to move from one side to another, the bone gave way in three different places by muscular action. The bone was completely united, but the arm remained helpless and at last he was invalided. One facial paralysis and one curvature of the spine, two rheumatic affections, one varicose veins, one leprosy, one internal piles, two syphilis, twenty debility, and seven scorbutic affections.

Requirements and recommendations.

15. A dissecting table is greatly needed in the dead-house, but is not allowed by the existing rules.

Special observations, new experiences in treatment, sanitation.

16. None.

H. M.'s 22nd Regiment N. I.

BOMBAY.—In Medical charge of Surgeon-Major H. A. LEWIS.

Average Strength	679	Deaths in Hospital	3
Do. Present	626	Do. out of do.	2
Admissions	1,323	Invalided	78
Daily Sick	38·2	Sick Leave	27

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875.....	Baroda	117·6	4·0	1·3
1876.....	Do.	97·9	3·4	0·9
1877.....	Do.	122·9	5·6	2·3
	Average...	112·8	3·3	1·5
1878.....	Ahmedabad, Bombay, and Belgaum.	211·3	6·1	0·5

1. The Regiment left Ahmedabad by train on the 23th April for Bombay, where it was stationed until the 9th September, when the Head Quarters with the Right Half Battalion proceeded by rail to Poona and was joined by the Left Half Battalion on the 16th September. On the 23th October the Regiment commenced its march for Belgaum, *viâ* Sattara and Kolapur, reaching this station on the 19th November.

2. The general description of the lines has been given in previous annual reports. The lines, &c. No changes have been made in them during the past year, and their hygienic condition is, on the whole, satisfactory.

3. The four latrines to the south of the lines are conveniently situated. The iron pans which receive the solid and fluid excreta are emptied twice daily into iron receptacles, and the contents are carted away to some distance, and thrown into pits.

4. The water supply is obtained from several wells in the lines. The quality is considered good, and there is a sufficient quantity. No analysis of the potable water in this station has been made for the last five years.

5. The supply of provisions in the bazaar is good and plentiful. Owing to the late famine, the prices are very high. There has been no change made in the men's clothing.

6. The duties consist of parades, drill, musketry instruction, guards, and orderly duties. Average number of nights in bed, 5. There is a "talimkhana" attached to the lines. The duties do not affect the men's health.

7. No changes have taken place in the hospital building and its surroundings since last year's report. Its present hygienic condition is fair. Hospital and its immediate surroundings, &c. &c. There is but one large ward, with accommodation for 25 beds without any overcrowding. The front and back verandahs can hold 15 cots each without inconvenience.

8. The general health of the men has been indifferent. The average number of daily sick was 38·2. In the previous year it was 35·9, but the admissions during the year under consideration were 1,323. In 1877 only 710 cases came under treatment. Fevers, complicated with chest affections, were chiefly the diseases treated. The long and short service men and the young recruits all suffered equally. In Bombay the latter were often in hospital. With regard to the physique of the men in general, this is very unsatisfactory. A great majority of the sepoys, principally Mahrattas, Mochees, and Purwarees, of ten years' standing and upwards, are of short stature, weak in constitution, without stamina, and ought, in my opinion, never to have been enlisted. At the inspection of the Regiment in Bombay last July by the Surgeon General, about 20 per cent. of the men were found unfit for active service. Since the Regiment left Ahmedabad, some fine lads have been enlisted. Each man on joining is inspected by the Commandant and carefully re-examined by the Medical Officer.

9. The regiment having but lately arrived at this station, I am not able to state what influence the climate or local circumstances may have on health, except to mention that a few days after the lines were occupied there was a daily increasing number of men going into hospital with ague, rheumatism, and lung diseases.

10. Malarious fevers again swell the number of admissions. There were 585 cases which came under treatment, as follows:—

Name of Station.	Malarious Fever. Admissions.
Ahmedabad.....	99
Bombay	241
Poona	162
On Line of March	50
Belgaum	33
Total.....	585

These cases of fever were chiefly of the intermittent type, and at the last three stations they were complicated with chest affections. There were 108 cases of chronic rheumatism, lung diseases 107, wounds and accidents (such as cases of shoe bite admitted during the march from Poona) 190, venereal diseases 39, contracted in Bombay and Poona. There were 41 cases of catarrhal ophthalmia and 10 of small-pox.

11. There were three deaths from intermittent fever, Mortality and its causes. diarrhoea and acute bronchitis respectively.

12. There has been no epidemic. Epidemics.

13. Thirty-nine children were vaccinated and seven were re-vaccinated. In every case arm-to-arm vaccination was adopted. Vaccination and re-vaccination.

14. Seventy-eight men were invalided, for the following causes, viz. fevers 2, eye diseases 1, chronic rheumatism 15, lung diseases 13, varicose veins 6, long Invaliding, and its causes. service and worn-out men 41.

15. A separate building near the hospital for the treatment of special or contagious diseases is a great want. As I firmly believe that the numerous cases of fever, catarrh and rheumatism that yearly come under treatment are chiefly owing to the men lying down on damp ground in their huts, sometimes only a mat intervening, I would recommend that cots or charpoys be issued to the regiment. Requirements and recommendations.

16. I have nothing particular to remark under this head. Cinchona mixed alkaloids and quinidine were used in mild cases of malarious fever. Special observations, sanitation, &c. In some patients they brought on gastric irritation. In severe cases quinine was obliged to be used.

H. M.'s 25th Regiment N. I.

ADEN.—In Medical charge of Surgeon Major M. HEFFERNAN and Surgeon DUTT.*

Average Strength.....	693	Deaths in Hospital	2
Do. Present.....	688	Do. out of do.	3
Admissions	593	Invalided	12
Daily Sick	15.4	Sick Leave	9

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Mhow and Indore	138.1	4.0	0.3
1876	Do. do.	130.4	5.1	0.1
1877	Do. do.	133.2	3.8	0.3
		133.6	4.3	0.2
1878	Aden	86.2	2.2	0.3

1. Head-quarters remained at Aden during the whole of the year. The Regiment supplied a detachment of fifty men with a Native Officer to the island of Perim, which was relieved every two months.
Location and movements.
2. The lines are situated in about the worst part of Aden, and during the hot season the wind, which is often very light, is obstructed from them by native houses, the Civil Jail, &c. The houses also are small, the streets very narrow, and ventilation in consequence must be defective.
The lines and their surroundings.
3. There are three latrines adjoining one another and placed about 250 yards from the lines. Two of these are allotted to the men and one to the women. The accommodation is fairly good. They are cleaned twice daily by sweepers, and the excreta removed at night to Holkets Bay. There are also three urinals near the lines, all for men. Disinfectants should be used for these urinals; they are in a very confined locality.
Conservancy.
4. The men get two gallons of sweet and three gallons of brackish water per diem. They complain that the quantity is insufficient, and an increase of one gallon sweet water has been recommended by the Surgeon of the Regiment, but the increase has not yet been sanctioned. The sweet water consists of rain or condensed water, especially the latter, as rain very seldom falls in Aden. The rainfall this year was 1.77 inches. The brackish water is received from Banian wells, which are a little distance from the lines.
Water supply.
5. The troops receive rations free from Government, which are generally sufficient except in vegetables. I have seen the men of this Regiment several times, and there is no doubt they suffer greatly from scurvy. I find that all of the patients in this hospital just now from various complaints show a scorbutic taint. The proportion of well pronounced scorbutic taints complicating other diseases is almost as great as among the indigent people coming into the Civil Hospital. Of the 29 men now in hospital, there is only one from pure scurvy, but not less than 9 with scorbutic complications. The clothing I think is very suitable, and I hear no complaints about it.
Food and clothing.
6. No ill effects on health can be detected from duties, exercise or amusements. The average number of nights in bed is 3.7. The regiment throughout the year has been wonderfully healthy. Only since the cold season commenced are the admissions above the ordinary. The men seem fond enough of amusements, but though they have got an "akhara" quite beside the lines, they don't seem to go in much for the athletic forms of sport. No doubt the climate of Aden is rather against sports requiring much bodily exertion.
Duties, exercises, and amusements, &c.

* Report is drawn up by Surgeon J. Macgregor, owing to the illness of Surgeon Major Heffernan.

7. The hospital is very good, and built of pukka masonry on an elevated stone plinth. The main ward, which alone is occupied, accommodates 22 patients at 100 square feet per man; the rest of the patients live in the verandah. There are two other rooms, each capable of holding 8 patients, one at each end of the main ward. Of these one is occupied by a dementia patient, the other is taken up by the office. There are also two other smaller rooms next the office at the west end, which serve as a dispensary. The office room is to be vacated at once for patients, and the office removed to the dispensary, while the latter is to be transferred entirely to the small room beyond. This I think will be a great improvement, for the hospital receives not only the sick of the 25th Regiment, but also those of the Aden Troop and of the Sappers and Miners. The surroundings are very good indeed with the exception of the latrines, which require fresh paving. This is a subject now under the consideration of the proper authorities, and will I hope be looked to without delay.

8. The general health of the men has been very good, lately not so much so. This is to be attributed to the change of season and the occurrence of some cases of dysentery and diarrhœa. I am not sufficiently long in charge to know much of the physique of the men individually, but as a body I think they are a fine enough lot.

9. Scurvy and ulceration are noted accompaniments of residence in Aden. There is no doubt scurvy prevails to an ordinate extent in this regiment. Influence of climate on health. The men get 7 oz. vegetable per diem, but this is quite inadequate; they should at least get 10 or 12 oz., or as fresh vegetables are not easy to obtain in Aden, some allowance should be made of preserved vegetables, such as potatoes, &c. A certain amount of correspondence has passed with head-quarters on this subject, but nothing has yet been done. The Deputy Surgeon General, in his Annual Report, only noticed 18 cases of scurvy among 296 men.

10. Ague gave 247 admissions, boils 51, contusion 41 (mostly shoe bites), diarrhœa 39, dysentery 29, scurvy 10, bronchitis 25, colic 20, rheumatism 29, debility 14, primary syphilis 5. These are the most important, and ague as usual heads the list, contributing nearly two-fifths of the whole. The large proportion of boils may be interesting as bearing particularly on the moist climate of Aden. There were only 10 cases of scurvy pure and simple; but this can easily be accounted for by the men, while suffering from this disease, becoming liable to contract other diseases, for which they are admitted into hospital and returned as such. Diarrhœa and dysentery are not particularly high and do not require any comment. The small amount of colic is very satisfactory. The same remark applies to rheumatism in this instance.

11. There were only two deaths during the year under report; one of these occurred in hospital from phthisis pulmonalis, the other suddenly from fatty degeneration of the heart, while deceased was on guard at the Main Pass.

12. None. A few scattered cases of small-pox occurred in the settlement; but did not spread nor affect the men of the Regiment.

13. There were 17 cases of vaccination. There is no note in the hospital of any unsuccessful case, so they must all have been successful. The vaccinations were carried on partly at the hospital, and there were no re-vaccinations.

14. There were only 12 men invalided, and from the following causes:

Worn out	7
Splinitis	1
Worn and debilitated	2
Rheumatism and debility	2

15. The hospital latrines should be looked to, as it is difficult to keep them clean, and they are the occasion of much nuisance. But this has been brought to the notice of the authorities, as I have remarked elsewhere. The scurvy question also has already been alluded to. The full complement of 1st Class Hospital Subordinates should be supplied to the hospital. At any rate there should be a 1st Class Hospital Assistant and one Native Medical Pupil. The latter is at this time of the year at ball practice during the most important part of the day. I cannot say much about these subordinates, but they appear to require a good deal of looking after.

16. I have no remarks to offer under this heading.

POONA DIVISION.

Average Strength Present during the year...	6,822
Average Daily Sick per cent. to the Average Strength Present...	3.6
Ratio of Mortality per cent. to the Average Strength Present...	1.3

H. M.'s Poona Horse.

SIRUR.—In medical charge of Surgeon A. K. STEWART.

Average Strength	495	Deaths in Hospital.....	5
Do. Present.....	483	Do. out of do.	1
Admissions	352	Invalided.....	28
Daily Sick	10.7	Sick Leave	4

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Sirur.....	80.8	3.1	1.0
1876	Do	69.1	3.1	0.4
1877	Do.	53.7	2.4	0.9
	Average...	67.9	2.9	0.8
1878	Sirur	72.8	2.2	1.0

1. The head-quarters of the Regiment are at Sirur, and there have been no movements since the last report with the exception of a small detachment of thirty-four men who relieved the 1st Lancers when they went to Malta. Six and three men were on escort duty in Poona and Bombay, respectively, for a short period.

2. The lines are situated too near the town, hence any outbreak of epidemic disease is very apt to be transmitted to the Regiment, and when the town is in quarantine it is very difficult to prevent the men going into it. They are situated north and south nearly, so that the prevailing south-westerly winds readily pass through and ventilate the open streets. The old cells so unfavourably reported upon last year have been replaced by good ones built with the new Quarter Guard, which is just completed.

3. The system of shallow pits with drains to carry off the fluid excreta in each house is objectionable, as a certain amount of fluid matter necessarily accumulates in the soil. To obviate this as much as possible, the drains are inspected regularly once a week, and the fluid matter is run to the roots of young trees planted opposite each house. Thirty-two long iron pans have been put, each in separate house enclosures, for experiment, and as they seem to have worked pretty well, it is intended to furnish them to all the houses when the state of the funds permits. The night-soil is deposited on land, supposed to be under cultivation, some distance to leeward of camp. The natives in this part of the country seem to have a most insuperable objection to using night-soil for purposes of culture, except apparently in the case of the river melon bed cultivators, and in their case its use has now been prohibited, owing to the contamination of the water supply which it necessarily induces.

4. The water supply from the river Goreh is fairly good and plentiful. According to the late Surgeon Gordon's report, it contains a considerable amount of salts and suspended matter; however, it never seems to produce any bad effects upon the troops. When the necessary test solutions and apparatus are obtained, a rough analysis will be made, as recently ordered by Government.

5. A considerable number of cases of scurvy occurred, chiefly however complicating cases of already existing primary disease; this necessarily shows that the men must still be more or less pinched for means. Food, though much cheaper than it was last year, is still above good year prices, and many of the men, more especially those with large families, are yet in the hands of the Bunias from the debts incurred during the last two years. The pay of the sowar in Silledar Corps is really very little when all his cuttings have been deducted.

6. The duties of the men are not excessive. Polo is played three times a week, and besides being a healthy exercise, it teaches the boys and Oomedwars of the Regiment to ride. There is a regular gymnastic course for the younger men and recruits. The Regiment is very healthy, the percentage of average daily sick being 2·3.

7. The old hospitals badly reported on formerly has been pulled down, and a new standard guard has been built in its place. A new hospital on the standard plan has been built, and is now almost ready for occupation, in the open ground to the east of the lines. The building now being temporarily used as a hospital was the old Regimental stores; it is only a few degrees worse than the old hospital, and was only used as a makeshift under pressure of circumstances.

8. The general health of the men is good, and though they are small as a body, they are active and intelligent.

9. The climate is remarkably healthy and dry. Upwards of 1,000 young trees have been planted during the past year, 692 of which are alive and flourishing.

10. The number of admissions during the year were 352. Of these 172 were admissions from fever, being the largest item, as usual. There were 19 cases of dysentery, 7 of venereal, 6 of respiratory disease, and 2 of scurvy. Though only two cases of scurvy are reported, yet in many instances this disease showed itself as a secondary complication.

11. The death-rate this year has been high when compared with the last three years. Three deaths occurred from ague and other complications which subsequently developed themselves, 1 from cholera, and 1 from tertiary syphilis.

12. There were no epidemics in the Regiment during the year.

13. The total number of primary vaccinations during the year were 53, all successful. There were 31 children on the rolls unvaccinated; many of these were too young and sickly or were in course of vaccination.

14. The number of invalids this year, 26, was again most unusually large, and this was due to the regiment being under expectation of active service, and hence getting rid of doubtful men that otherwise would have been kept on. Of these 11 were invalided as being above 32 years' service, 4 for chronic rheumatism, 2 for defective vision, 3 for debility and old age, 1 for femoral and 1 for scrotal hernia, 1 for tertiary syphilis, and one for varicose veins, other causes two. Two supernumerary Native officers were invalided and absorbed.

15. None, with the exception that iron latrine pans might be introduced in place of the present system, when funds will permit.

16. In the cholera case which occurred and was reported in July, the treatment followed was, large and repeated hypodermic injections of hydrate of chloral, with sedatives, as chloroform and spirit of æther, combined with simple astringents internally on the relaxation theory promulgated by Surgeon Major Hall. Undoubtedly benefit was obtained by this, as there were no cramps at all, and both the purging and vomiting were sensibly checked. The patient died during the secondary fever.

Further experiments on guinea worms were limited, as only one case of a syce came under observation. The man was placed on his face, care being taken that he could not see, and I then inserted the sting of a large scorpion into a piece of the worm which had been drawn out. On my forcibly compressing the poison bag he at once exclaimed that he felt a tickling or thrilling sensation in the calf of his leg, the locality of the worm, distinctly showing that the animal was sensibly affected by the poison. Next day a considerable portion of the worm came away.

Inspection by Deputy Surgeon General BEATTY.

Both the sanitary condition and conservancy arrangements of the lines were excellent at the time of my inspection on the 3rd of December 1878.

The pernicious practice of depositing night-soil in the dry bed of the river in which melons are cultivated, has been prohibited. During the past year several hundreds of trees have been planted between and surrounding the lines, which in the course of a few years will add materially to the comfort of the men.

Since last report, new cells have replaced the old ill-constructed ones, and a new guard room has been built on the site of the old hospital. A new hospital, on the standard plan, has also been erected, and is now nearly ready for occupation.

The sick were most carefully looked after by Surgeon Stewart, who takes much interest in his work, and in the management of his hospital generally. His remarks on the treatment of guinea worm by the injection of scorpion poison are of interest.

H. M.'s Sappers and Miners.

KIRKEE.—In Medical charge of Surgeon Major W. NIVEN and Surgeon C. MONKS.

Average Strength.....	478	Deaths in Hospital	6
Do. Present.....	470	Do. out of do.....	...
Admissions.....	1,279	Invalided	53
Daily Sick	27.4	Sick Leave	7

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Kirkee	55.8	1.8	0.7
1876	Do.....	46.7	2.0	0.6
1877	Do.....	96.1	3.5	1.1
	Average...	66.2	2.4	0.8
1878	Kirkee	272.1	5.8	1.3

1. The corps, consisting of 5 companies, 4 of which are stationed at new Jhansi and 1 at Aden, has been broken up, on account of field service. Location and movement. The following were the movements :—Nos. 3 and 5 companies left for Malta expedition on the 24th April, returning here on the 23rd November, No. 2 Company left for Cabul on the 6th December, and No. 3 Company was sent to Bombay on the 30th December for torpedo practice.

2. A more extended observation of the nature of the ground on which the lines and bazar are situated leads me to believe that their hygienic condition is not satisfactory on account of the system of drainage being imperfect, and also on account of there being in the immediate neighbourhood a number of hollows which during the monsoon months are filled with water and keep the ground wet. The bazaar requires to be levelled and drains made for carrying off storm water. The lines and their surroundings, present condition, hygienic and otherwise.

3. The latrines allotted to males and females were described in the report of last year. Conservancy. The night-soil is carried away by a conservancy cart to the general manure yard. I would suggest the use of some disinfecting powder in the buckets, as a slight odour is perceptible on near approach to the latrines.

Water supply. 4. The water supply is obtained from Kharakwasla canal; it is good and abundant.

5. The food supply has been a little better than in the preceding year, though the price is still kept almost to the same rate as mentioned in last year's report. The clothing is the same, therefore it is not necessary to repeat its description.

Food and clothing.

Duties, exercise and amusements, their effects on health.

6. In the report of the preceding year the duties of the Sappers were said to be heavy.

At present there are about 55 men of the 11th Regiment N. I. located here for duties in the Kirkee Cantonment, which lightens the Sappers' work to some extent. There is a gymnasium, and a European Non-Commissioned Officer is told off to instruct the men in gymnastic exercise. The time of the men might also be well employed in gardening in the vicinity of their lines, if some kind of inducement were held out to them.

7. A description of the hospital having been fully given in the reports of previous years, I consider it unnecessary to repeat it here. The objectionable system of clay washing the floors of the hospital, so frequently condemned in former reports, is still practised.

Hospital and its immediate surroundings, present condition and otherwise.

8. The general health of the men who went on field service with the Malta expedition suffered considerably, and on their return from Cyprus many were invalided. Of those who remained at home the general health showed no improvement on that of the previous year.

General health and physique.

Several cases of the admissions from fever have exhibited enlargement of the spleen and a great number of children have suffered from affections of the spleen.

9. The proximity of the lines to the sloping banks of the river, and the incomplete drainage for carrying off the surplus and waste water from the tanks, as well as the want of surface drainage for carrying away the storm water, have in my opinion an unfavourable influence on health.

Influence of climate or local circumstances on health.

10. The number of admissions were 1279, of these 684 were from ague, being more than 50 per cent. of the total admissions, 59 from lung diseases, 32 from diarrhoea, and 50 from dysentery.

Details of treated.

Mortality.

11. Four deaths took place in the hospital, 2 from pneumonia, 1 from dysentery, and 1 from bronchitis. Two deaths took place amongst the men who went to Malta,

Epidemics.

12. There were no epidemics during the year in the regiment.

13. Primary vaccination was fully practised. At the end of the year there were 9 children unprotected: they were all too young for the operation. Re-vaccination was not performed in any instance.

Vaccination and re-vaccination.

14. A greater number of men were invalided than in former years. 43 men were invalided at head-quarters and 10 at Aden,—38 for old age and debility, 7 for lung diseases, 3 for injuries, 2 for diseases of the nervous system, and one each for rheumatism, eye, and heart diseases.

Invaliding.

Requirements and recommendations.

15. I would strongly recommend the floors of the hospital to be reconstructed and asphalte laid down both in the wards and in the verandah.

16. Under this medical charge there is a portion of the 43rd Company of Royal Engineers, consisting of 14 Sergeants and 23 Corporals, and of these 27 are married men with families. The medical returns of the above are forwarded direct to the Surgeon General, British Forces, and the medical returns of the European Officers attached to the Sappers and Miners are also rendered to the British Medical Department. The medical charge of the Native Followers of the Royal Artillery stationed at Kirkee, consisting of about 318 men, have been transferred to the Assistant Apothecary in charge of the old Sappers Hospital, Kirkee. The existing arrangements of the medical treatment of the 43rd Company Royal Engineers are very unsatisfactory. Some of the Company are quartered at new Jhansi, and others at Kirkee. The latter receive out-door treatment from the Assistant Apothecary in charge of the old hospital at Kirkee, and the families when sick are visited in quarters by the medical officer of the Sappers, who may thus be obliged to go from one place to the other several times in the day or night.

Special observations, new experience in treatment, sanitation.

Intermittent fever was the prevailing disease. Latterly most of the cases were treated with emetics of ipecacuanha and tartarized antimony, followed by decoction of cinch bark, and the preparations of cinchona only given in severe cases.

The large numbers in hospital from April to October may be accounted for by the old and sickly men being left behind when the two companies proceeded to Malta. The best and strongest men were selected for what at that time was considered to be field service.

Inspection by Deputy Surgeon General BEATTY.

My annual inspection was made on the 3rd November 1878, when only two companies were present, the remainder being absent on duty.

The fears entertained by Surgeon Major Niven (the officer formerly in medical charge) in regard to the proximity of the lines to the river banks, and incomplete drainage, acting unfavourably on the men's health, have been proved by experience to be groundless. Conservancy is carefully attended to. Water supply is abundant throughout the year. The general health of the men, who returned from the Indian Expeditionary Force, was found to have suffered so severely from the effects of fever contracted by exposure whilst engaged in road making at Cyprus, that it became necessary to invalid a larger number than in previous years. Fifty-three were discharged as unfit for further service.

The hospital of the Native Sappers was in excellent repair and highly efficient, but until a new one has been built for the use of the Royal Engineers stationed at new Jhansi, the existing arrangements for treating the sick of this important branch of the service must continue as unsatisfactory.

H. M.'s 2nd (Prince of Wales' Own) Regiment N. I. (Grenadiers).

BELGAUM—In Medical charge of Surgeon C. T. PETERS, M.D.

Average Strength	694	Deaths in Hospital	3
Do. Present	632	Do. out of do.	5
Admissions	598	Invalided	39
Daily Sick	18·4	Sick Leave.....	14

Years.	Stations.	Rate per cent. to Average Strength Present or		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Aden	60·2	2·3	0·1
1876	Belgaum	63·8	2·6	0·8
1877	Do.	56·4	3·0	1·4
	Average...	60·1	2·6	0·8
1878	Belgaum	80·4	2·9	0·4

1. The Regiment was stationed in Belgaum till the 12th November 1878, when it marched for Vingorla, being under orders for Ahmedabad. Location and movements. The destination was however changed the evening before the march commenced, to Nusseerabad. As the march commenced within a few days after a very heavy fall of rain, the encamping grounds were more or less damp and covered with thick grass the whole way from Belgaum to Vingorla, and the men consequently suffered somewhat from catarrhal affections. Vingorla was reached on the morning of the 18th idem, whence the first detachment, consisting of three companies with head-quarters, embarked on the following day on board I. G. S. Dalhousie, arriving at Bombay on the 20th and at Ahmedabad by rail on the 25th. The second detachment, consisting of two companies,

left Vingorla on the 28th November and arrived at Ahmedabad on the 2nd and 3rd December. The two detachments, consisting of five companies, composed the head-quarters detachment which left Ahmedabad on the 9th December, reaching Deesa on the 18th idem and Pallee on the 1st January, and finally arriving at Nusseerabad on the 14th January 1879. The roads were very heavy, the soil sandy, the drinking water more or less brackish; the food supply in most places limited in quantity and inferior in quality, and the weather extremely cold, the temperature ranging frequently in the morning between 34° and 50° F. In consequence of which, towards the latter part of the march several men took ill with fever and pneumonic affections, of whom two died on the line of march and four in the hospital at Nusseerabad, where they were sent by rail; but these casualties having occurred in January 1879, are not included in the accompanying returns. The last detachment, consisting of three companies, left Vingorla on the 9th December, and following the same route via Bombay, Ahmedabad, Deesa, Sirolee, and Pallee, reached Nusseerabad on the 25th January 1879.

The second detachment left one native officer sick at the Marine Battalion Hospital, Bombay, and one havildar at Ahmedabad. The third detachment left five sick at Ahmedabad (one of whom died subsequently) and eleven at Deesa, for treatment, the men being unable to march, making in all eighteen sick left behind for treatment and seven deaths. On the whole, the long march, in consequence of the great privations to which the men had been subjected, has not had the same salutary effect on the men's health as short marches generally have. The head-quarters detachment were in tents for two months and three days, while the last detachment were two months and fourteen days. The sanitary arrangements were carried out as satisfactorily as possible. Surgeon Bull came in charge of the last detachment, which he joined on the 19th December.

2. In my last annual report I had the honour to notice (at page 39 of the Medical and Sanitary Report of the Native Army of Bombay for 1877) that a good portion of the ground between the lines and the Khanapur road used for rice cultivation was under water for several months during the monsoon, and to this cause a good deal of the malarious fever may be attributed. In consequence of a bund having been built since across this piece of low ground close to the Khanapur road, the rain water reached this year quite up to the foundation of the latrines, and this interfered with the drainage from the lines, causing thereby the floors of a good many of the huts to be damp, and increased the number of fever cases, as will be seen under para. 10. But on the sluice being opened, with the subsidence of water, the fever cases also went down.

Conservancy.

3. The latrines have been repaired.

Water supply.

4. Good; same as last year.

5. The supply has improved although a good deal of the grain was damaged by an untimely fall of rain last year before the harvest was in.

Food.

Duties, exercise, amusements; their effect on health.

6. Same as last year. The men had on an average 4½ nights in bed, and their duties, exercises and amusements had on the whole a salutary effect upon the men's health.

7. The hospital and its surroundings have been very clean. The latrines were put into repair. In consequence of the large number of cases treated in hospital, the excess over 20 patients for whom there is accommodation in the ward had to be treated in the verandah when fever was prevailing.

Hospital and its immediate surroundings; present condition, hygienic and otherwise.

8. In consequence of an improvement in the grain supply, the health of the men improved considerably during the latter part of the year's stay in Belgaum, and there was very little scurvy visible among them, which they had contracted in Aden.

General health and physique.

9. This year there was an unusually heavy fall of rain, amounting to 55·85 inches up to 11th November, in consequence of which there has been a good deal of fever both in Belgaum and the surrounding districts. There was slight cholera towards the early part of the year only, but it completely disappeared after the seasonable fall of rain.

Influences of climate or local circumstances.

10. From 1st January to 31st October, for a period of ten months while the Regiment was stationed in Belgaum, there were 376 admissions, and with the 15 remained from last year's returns, there were altogether

391 treated. In November and December there were 75 admissions in the head-quarters hospital and 57 in the detachment hospital; so that in all there were 523 treated against 375

Details of treated.

of last year. There were 175 admissions for fever during the ten months in Belgaum and 54 during the last two months while the Regiment was marching; in all 229 cases or nearly 50 per cent. of total admissions. Diarrhœa gave 13 admissions on the march and only 6 in Belgaum, total 19. Dysentery 7 on the road and 11 in Belgaum, total 18. Respiratory diseases 13 on the road and 15 in Belgaum, total 28. Venereal 22 in Belgaum and 8 on the road; of the latter the largest admissions were from the men who remained in Vingorla with the 2nd and 3rd detachments. Thus it will appear that the largest ratio of admissions was obtained during the two months that the regiment was marching, especially with regard to fever, diarrhœa, dysentery, and respiratory diseases. Of the 22 cases of venereal contracted in Belgaum, most of them came from women residing in Shahpur, where they can evade the lock hospital rules with impunity.

11. There were three deaths in hospital, from cholera 1, remittent fever 1, ague and acute phthisis 1. In the lines one man died of self-inflicted (gunshot) wound of the abdomen, penetrating through the chest. Besides the above, reports have been received of the death of one native officer and two men while on leave; and one havildar left behind sick at the hospital 15th Regiment N. I. at Ahmedabad.

12. As stated already, there was one fatal case of cholera in January; since then there have been no admissions from this cause, but malarious fevers have prevailed more so than last year. There was one case of chicken-pox in June.

13. Vaccination was carried on until the Regiment left Belgaum. There were total 61 primary vaccinations, as follows:—1 European child and 60 natives; of these, 35 were boys and 26 girls. All were successful, those who failed at first having been successfully vaccinated in the course of the year. There were no re-vaccinations of children, but 10 recruits were re-vaccinated during the year and were successful. Only those were vaccinated on whom there were no small-pox marks, or who having been vaccinated previously did not bear good cicatrices.

14. Five men were invalided before a Special Board and 31 men by the General Invaliding Board. One native officer and one private were invalided for having served over 32 years, qualifying for full pension. In all 33 men were invalided during the year. Of these there were 20 for general debility, 1 sciatica, 2 palpitation of heart, 8 old age and worn out, 1 defective vision, 1 chronic scurvy, 2 chronic bronchitis, 1 psoriasis of the palms of the hands and feet, 1 partial strabismus, and one loss of toe, right foot. Besides these, 1 recruit was discharged for hepatic disease.

There were also 14 men sent on sick leave to their native villages, in Hindoostan, the Punjab, and the Concan. Of these 4 for ague, 1 asthma, 2 dysentery, 1 gastrodynia, 3 bronchitis, 1 syphilis secondary, 1 chronic rheumatism, and 1 wound of hand. There were two European officers sent on medical certificate to appear before the Medical Board in Bombay for furlough to Europe for hepatic complaints, 1 from Belgaum and 1 from Ahmedabad. The former was granted one year and the latter two years' furlough on medical certificate. There was also one officer sent on sick leave to Poona last year, who was recommended by the Medical Board in Bombay to appear before the Medical Board in London. He is still in Europe. In all, three officers have gone to Europe on medical certificate.

15. Thorough drainage of the fields to the south of the lines is essentially necessary. The men of the 14th Regiment N. I., whose lines are nearer to these rice fields, suffered even more than the men of the 2nd Grenadiers; and if the statistics of the two Native Regiments stationed in Belgaum are examined for the past ten years, it will be observed that the Regiment which occupied left flank lines, now occupied by the 14th Regiment N. I., have suffered yearly more than the Regiment occupying the right flank lines, occupied during the year by the 2nd Grenadiers, who suffered more from fever than in the last year, in consequence of the inundation of the rice fields already noticed, and this building of a bund as a famine relief work, which keeps the water in, has proved to be very injudicious, as was, I understand, pointed out at the time by Dr. Hewlett, the Sanitary Commissioner, during his visit to Belgaum.

16. The proximity to the lines of the native town of Shahpur, where all hygienic principles are disregarded, including the Contagious Diseases Act, add materially, both directly and indirectly, to the ill-health of the men of the Native Regiments, and it would be very desirable either to compel the Shahpur authorities to attend to all the sanitary rules in force in the Cantonment of Belgaum, or that the place be purchased by the British Government, as suggested by Dr. Hewlett in his Sanitary Report.

H. M.'s 3rd Regiment N. I.

KOLAPUR.—In medical charge of Surgeon Major R. C. THORP, M.D., and Surgeon T. D. WORGAN.

Average Strength	708	Deaths in Hospital	9
Do. Present	664	Do. out of do.	4
Admissions	1309	Invalided	35
Daily Sick	19.4	Sick Leave	7

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Ahmedabad	175.0	4.6	2.1
1876	Kolapur and Kaladgi	95.3	2.7	0.3
1877	Do. do.	111.8	2.9	0.6
	Average.....	127.4	3.4	1.0
1878	Kolapur and Sholapur	197.1	2.9	1.3

1. The right wing and head-quarters occupied the station of Kolapur from the 1st of January to 4th December; they then marched to Poona, reaching that Station on the 18th December. They were there joined by the left wing, and the whole regiment remained in camp till the close of the year.

Lines and surroundings, present condition, hygienic and otherwise.

2. I would refer to the Annual Report of the previous year 1877, in which Surgeon Macgregor deals very fully with these points.

Conservancy.

3. I have nothing to add on this point.

4. In consequence of a large rain-fall, the water supply in the wells was greater in quantity and much better in quality than in the previous year.

Food and clothing.

5. I am of opinion that the men diet themselves in too limited a manner, and that certain foods are deficient, as many sepoys of more than 15 years' service present signs of scorbutic taint. Animal food is only consumed twice a week by those who are meat eaters; the quantity even then being exceedingly small, half a pound of uncooked meat being consumed by a man if single, and divided among himself and children if married. With regard to the clothing, the red tunic which is worn all the year round seems somewhat heavy and tight fitting; for hot weather the "khaky" clothing is eminently more comfortable and not ill looking.

Duties, exercises, and amusements; their effects on health.

6. I am unable to give an opinion on these points for the year 1878.

Hospital and its surroundings, conditions, hygienic and otherwise.

7. I would refer to remarks on these subjects by Dr. Macgregor.

8. From the weekly reports the health of the right wing and head-quarters seems to have been remarkably good throughout the year; the health of the left wing is commented on in the report for that wing.

9. This subject is dealt with by Surgeon Macgregor in the previous report, but I may add during the months of June, July and August there seems to have been a large number of admissions for "febricula," attributed to the solar heat.

Detail of those treated.

10. The principal causes of admission during the year were, ague 784, febricula 80, syphilis 50, and dysentery 45.

The disproportionately large number of cases of "ague" treated during the year was caused by the prevalence of this disease among the left wing at Sholapur. The increase of "syphilis" on the previous year, an increase of 30 cases, is also due to the large number of admissions for "primary syphilis" at the same station. One case of pyæmia occurred, following abscess due to guinea worm.

11. Nine deaths occurred during the year in Hospital and four more are reported while on sick leave and furlough. The deaths were caused by secondary syphilis, remittent and intermittent fevers, encephaloid cancer, anæmia, and pyæmia.
- Mortality and its causes.
12. No epidemic occurred in the regiment during the year, though malarial fever assumed an almost epidemic form among the left wing at Sholapur.
- Epidemic.
13. Vaccination and re-vaccination were carried out in a very much more efficient manner than during the previous year. An increase of 11 primary vaccinations and total increase of 42 re-vaccinations during the year, all of which were reported successful.
- Vaccination and re-vaccination.
14. Thirty-five men were invalided during the year for discharge as recorded in the Adjutant's office; of these only 29 however were recorded in the hospital books. The causes were chronic rheumatism, general debility, old age, and length of service.
- Invaliding and its causes.
15. I have nothing to say at present under this heading.
- Requirements and recommendations.
16. No records of special treatment or sanitation are recorded in the weekly returns, and since I have had charge of head-quarters, all cases have been of a simple nature, all yielding to treatment. Many cases of quotidian ague have been cut short by arsenic, where large doses of quinine have failed.
- Special observations in treatment, sanitation.

Left Wing H. M.'s 3rd Regiment N. I.

SHOLAPUR.—In Medical charge of Surgeon F. F. MACCARTIE.

The wing left Sholapur on the 18th of December 1878, and joined the head-quarters at Poona. From the returns, which show 630 admissions into hospital during year, of which 459 were from fevers, the health of the wing cannot be said to have been in a satisfactory state. The large number of fever admissions into hospital would point to the effect of Sholapur on the health of the men. There were (6) six deaths during the year, one from ague, two from remittent fever, two from syphilis secondary, and one from anæmia. One color havildar and nine sepoy were invalided during the year—five for disability caused by length of service, four for general debility, and one for chronic rheumatism.

H. M.'s 4th Rifles B. N. I.

SATARA.—In Medical charge of Surgeon Major C. G. H. ROSS.

Average Strength	683	Deaths in Hospital	10
Do. Present.....	655	Do. out of do.	1
Admissions	850	Invalided	25
Daily Sick	17·7	Sick Leave	25

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Satara, Bombay and Asirghur.	93·8	2·5	0·4
1876	Do. do. do.	96·3	2·9	0·6
1877	Do. do. do.	128·9	3·7	0·8
	Average.....	106·3	3·0	0·6
1878	Satara, Bombay and Asirghur.	129·7	2·7	1·5

1. The head-quarters of the Rifles were stationed at Satara until the 14th November 1878, on which date they moved out and began the march on Poona via Nagwari, Bhunj, Yellow, Wickvi, and Khed. The sites of these five camps were well selected. On the march itself the general health of the men improved, and comparatively few fell out for whom it was necessary to procure carriage on account of foot soreness arising from badly fitting boots. The Regiment, which for five years had been broken up in consequence of furnishing detachments of two companies each to Bombay and Asirgarh, re-assembled in Poona in its entire strength on the 19th November 1878.

2. The lines erected on the standard plan have their history inscribed in English and Marathi on a marble slab built into the east wall of the quarter-guard. The inscription runs thus:—"These lines were built by the 8th Regiment Bombay Native Infantry; the material being supplied by the late Govind Rugoonath, Contractor, for 31,000 Rupees. The work was commenced on the 4th November 1874 and finished on the 19th May 1877." The lines stand north and south on gently undulating ground, which sloping westward, insures their effective drainage into a large nullah which separates them from the gymkhana cricket ground. The site immediately north of the lines, occupied by the 11th Regiment N. I., has been judiciously selected. The men's huts are exceedingly good, and a great improvement on the miserable quarters allotted to our sepoys in Satara, which were overcrowded, and in which the hygienic essentials of cubic space, ventilation, water supply, and proper drainage, were in a great measure dispensed with. In the present lines, the pendals, eight in number, consist of four blocks, each of which contains four havildar and eighteen sepoy huts. The verandahs of the former are considerably larger than those of the latter. The total number of sepoy huts is 576. The streets are spacious and open to the breeze. The highway, which runs east and west dividing the quarters of the men of the right and left wings, is 168 feet broad. An irregular or winding trench traverses its entire length, which if deepened and faced with masonry would improve the drainage of the monsoon waters, which would then empty themselves freely by this channel into the nullah above mentioned. The streets running between the pendals are 142 feet broad, and those at right angles running north and south measure 48 feet 10 inches in breadth. The quarters of the native officers, which stand detached from the lines, partly surrounded by small gardens, look well, and are said by their inmates to be comfortable houses. The quarter guard at the east end of the lines is a substantial stone structure, roomy, well lighted and ventilated. North of the quarter guard stand the solitary cells, two in number, which have been built on sound sanitary principles. The same may be said of the school house and the rest of the subsidiary buildings.

3. The regimental system of conservancy has undergone no change since last report, which is satisfactory so far as the lines are concerned, but not as regards the latrines. The sepoys' latrine with 56, and the women's with 24 seats, stand a little to the north-west of the lines. The distance from the nearest pendal, 250 yards, is immaterial in fair weather, but impracticable, I should say, during the monsoon, if men were urgently called to the rear. The dry earth system should be introduced, which does away with the sickening smell which pervades the immediate neighbourhood of all latrines worked otherwise. Instead of one Regimental latrine common to all, each company should have one of its own, on ground close at hand, and worked on the dry earth system. Night and morning the contents of the latrines are carted away in an iron tank beyond camp limits, and there disposed of. Seven male and two female sweepers is the strength of the conservancy establishment. In Satara two trench latrines were first introduced in 1877. These were distant from the lines 250 yards. The system did not work well, as there was no proper supervision.

4. In no particular has the Regiment benefitted more by leaving Satara and coming to Poona than in its water supply. In Satara the wells in the lines, four in number, dry up in the hot weather, and the men have then to go long distances to fetch water,—either from the Ranee's garden half a mile off, or the river Yena more remote still. The water in Satara, though considered good by the sepoys, was, according to the Chemical Analyser to Government, and as stated in last report, only of "fair quality." But in Poona all this is changed, for here the water derived from the Kurruckvasla canal is plentiful and wholesome. To the west of the lines and near the Regimental garden stands the howd or cistern with 36 cocks, whence the water for daily use is drawn. The cistern holds 30,200 gallons, and is supplied from the Mutha right bank canal, which comes from lake "Fife." The rainfall in Satara from 1st January to 14th November 1878 amounted to 38 inches and 40 cents, and that of Poona for the twelve months was registered at 36 inches and 69 cents, a difference only of 1 inch and 71 cents.

5. It was stated in last year's report that in consequence of the scanty rainfall food rose to famine prices. These may still be said to rule in Satara, and it is doubtful if they will ever fall again to the old or com-

paratively moderate rates. The price of grain and compensation on account of dearness of provisions were much higher than in Poona. The average amount of grain compensation in Satara for 10 months was Rupees 6-15-0, and in Poona for the year Rupees 3-12-0. Compensation is an evil that should be eradicated from the native army. A fixed rate of pay and the adoption of a system of rations which did not excite caste prejudice, would without doubt improve the efficiency of the sepoy, who too often starves himself on compensation, with the view of saving every rupee of his monthly stipend. These misers are the men who most frequently come on the sick list, and whose cases are benefited by diet rather than medicine. The clothing of the Regiment remains unaltered. The uniform of rifle green is more suitable for a temperate than tropical region. It was stated last year that sepoy when off duty donned native attire but wore no under clothing. This is still the case. On duty however the native dress is worn under their uniform, an arrangement which strikes one as being exceedingly slovenly and indicative of the sepoy's want of the sense of comfort. Sepoys with few exceptions wear no stockings. As a substitute on the march some of them wrap rags round their feet, which answers well and prevents chafing and blisters. The Kilmannock cap now in wear gives the men a smart appearance on parade, and the red pugrie of their undress does not misbecome the Asiatic countenance. The new helmet of the European officers is a great improvement on the one condemned in last year's report, as it is intrinsically lighter and more shapely. By removing the cover of invisible green, the ordinary Regulation helmet appears, the only difference being that the chin chain and spike are bronzed and the pugrie a myrtle green.

6. The routine duties of the regiment were a little heavier in Satara than Poona, judging by the average number of nights in bed, which were respectively $7\frac{1}{4}$ and $8\frac{1}{4}$. At either station these duties were not harassing to the men, and do not appear to have influenced the general health unfavourably. Visiting the bazar excepted, sepoy as a rule do not spontaneously take constitutional exercise. There was no *talimkhana* when the Regiment arrived in Poona, but one is now in contemplation. In Satara the *talimkhana* was in great request, and gymnastic feats were skillfully accomplished by many of the recruits and young men of the Regiment, some of whom distinguished themselves by carrying off prizes at the soldiers' sports which take place annually in Satara.

7. The distance between the hospital and lines, 1,150 yards, is inconveniently great. The site selected for the new hospital will remedy this evil. Hospital and its immediate surroundings : present condition, hygienic and otherwise. The present establishment (originally intended for medical stores) has ample accommodation for the sick of the Regiment under ordinary circumstances. There are two wards of unequal size divided by the dispensary, which is also used as an office. The ventilation and lighting are very good. The out-houses are in fair order. The compound in front of the hospital is laid out as a garden, which with little trouble might be turned to good account, by the cultivation of flowers and vegetables. The desiderata of the hospital are three: 1st, a detached or separate ward for contagious diseases; 2nd, a dead-house for *post mortem* examinations; and 3rd, the direct service of water from the Kurnekvash canal. On the arrival of the Regiment in Poona, the dry earth system of conservancy was introduced in the hospital latrines, and works well. It seems unnecessary to say more regarding the hospital and its surroundings, as these topics have been discussed in many previous annual reports.

8. When the Bombay and Asirghar detachments were recalled, and the Regiment assembled in Poona on the 19th November 1878 in its full strength, the general health of the men was reported good. General health and physique. Of course there was with increase of strength an increased number of sick. The increase of strength rose from 386 to 672, and the daily average number of sick for the week ending 15th November rose from 4.1 to 17.7 in the succeeding one. The Bombay Detachment furnished the larger number of admissions to hospital, chiefly due to ague, complicated with bronchitis. In the remarks for the week ending 28th December, it was stated that the health of the men had improved since coming to Poona. During the first six months of the year in Satara the health of the men was good. In July it was only fairly good. In August the standard of health was lowered in consequence, it is believed, of the insubstantial state of the lines. In September there was no improvement. As a result, the hospital was overcrowded, and it was found necessary to pitch tents for the accommodation of some of the sick. Cold and damp in the miserable quarters of the men accounted for much of the sickness which then prevailed. There is no doubt that the goodness of the Satara climate was influenced unfavourably, and the health of the men injured by compelling them to live in huts which are not fit for human dwellings. They began to improve at the end of October, and in November and December the weekly reports were more satisfactory. Regarding the physique of the men, the height, weight, and chest measurements were carefully noted. The average height of the privates is 5 feet $6\frac{1}{2}$

inches. The tallest man in the ranks measures 6 feet 3 inches and the shortest 5 feet 4 inches. The average weight of the men is lbs. 123·3. The heaviest man weighs 216 lbs. and the lightest 98 lbs. It will thus be seen that the general physique is good, and if I mistake not, above the average of other Regiments. In the event of active service for which the rifles are well fitted, 30 or 40 men would have to be eliminated from the ranks on the score of age or physical disability.

9. The climate of Satara and Poona are not dissimilar. In the year under review the rainfall at both stations was almost identical in amount, as may be seen by referring to para. 4, and the mean annual temperature I believe differs but little. In a climate like that of Satara, the general health would be greatly improved if better quarters were provided for the sepoys. In regard to these, our men benefitted immensely by the change to Poona.

10. Admissions to hospital 850, with 32 that remained, give a total of 882 treated. 823 were discharged cured, 10 died, 21 remained in hospital at the close of the year, 25 proceeded on sick certificate, 3 were discharged, one with a gratuity and two whose disease was changed on re-admission. Of the 882 cases treated, admissions from ague, 592, exceeded those from all other causes, and are 92 in excess of the numbers under treatment for this disease in the previous year. Fever therefore impaired the general health more than all other maladies combined, and yet its power in a station like Satara would be felt but little, if our sepoys were properly housed. Although the cases treated were numerous, it is satisfactory to record no deaths under this head. There were only two admissions from remittent fever. In the list of *general diseases*, a case of chicken-pox, and two admissions for measles, are reported from Bombay and Asirghar. Four cases of mumps occurred. Admissions from chronic rheumatism and lumbago numbered respectively 29 and 4. Twelve from syphilis (primary 10 and secondary 2), bronchitis 13, and pneumonia 4, were the chief admissions in the list of *respiratory diseases*. Eighty-five admissions occur in *diseases of the digestive system*. Dysentery furnished 30 and diarrhoea 25 cases. Guinea-worm 13 in *diseases of the cellular tissue*, boils 32 in affections of the cutaneous system, and contusions 56 in the list of injuries, are somewhat numerous. The residue of the diseases which appears in the return calls for no special comment.

11. Of the 882 patients under treatment during the year, 10 died in hospital, from the following causes:—pneumonia 4 (one at Asirghar, two at Satara, and one in Poona), malignant cholera 2 (one at Bombay, one at Satara), bronchitis 1, diarrhoea 2, constipation 1, at Asirghar.

12. Cholera prevailed extensively in the city of Satara Suddar bazar, and throughout the Collectorate. In June on its appearance in the lines, all needful precautions were taken and orders issued to white-wash the men's quarters. Two of the sepoys were attacked, one died. Two women and two children were received into the grass hut set apart as a cholera hospital. The children recovered, but the women died.

13. During the year, 28 children were vaccinated successfully. The lymph in Satara is generally good. No cases of small-pox occurred.

14. Twenty-four men were invalided for discharge, on the following grounds:—bronchitis 5, general debility 3, malarious fever 5, old age 6, rheumatism chronic 4, syphilitic rheumatism 1. One was discharged with gratuity.

15. The requirements and recommendations to render Satara more perfect as a station for native Troops need not be reiterated here, as former reports entered fully into these questions. As the requirements and recommendations for Poona have been discussed in the foregoing pages, it is needless to repeat them in a separate para.

16. As regards special observations and new experiences in treatment, sanitation, &c., the following remarks may fitly conclude the report for 1878. In malarious fevers the virtues of cinchonidine and cinchona mixed alkaloid were not so pronounced as the experience of many appears to indicate. In intractable cases in which quinine itself failed as an antiperiodic, change of air was recommended in seventeen instances. In one case of ague, the symptoms were irregular. The temperature of the hot stage rose to 105, there was severe and continued headache, pulse 140 in the minute, was weak and fluttering; suspecting the presence of intestinal parasites, santonine was given with good effect to the speedy relief of the patient, by the expulsion of a couple of large round worms. As an experiment in the treatment of cholera, water holding common salt in solution was injected into the bladder every third hour, and appeared to do good. One of the patients who was in a state of collapse on admis-

sion, rallied under the treatment for a time, but ultimately succumbed. The other, who was similarly treated, made a good recovery. Injection in the case of the women and children was not resorted to. The experiment however was not confined to the sepoys of the Regiment who were attacked, but was repeated on some patients in the civil hospital, and, as I think, with not unfavourable results. I believe that the successful treatment of cholera will be found sooner or later in the use of remedies which will prevent the arrest of the urinary secretion.

Inspection by Deputy Surgeon General T. B. BEATTY.

My annual inspection was made on the 26th November 1878. The lines, which are exceptionally good, have now been occupied since May 1877, and are found to meet, as regards accommodation, ventilation, and drainage, all requirements for Native Troops. The defective latrine conservancy referred to by the Medical Officer should be improved through communication with the Officer Commanding the Regiment, to whom the question has been referred. The water supply is perfect and requires no remark. The general health of the Regiment improved by the change from Satara to Poona. At the former station, during the months of August and September, the men suffered severely from the effects of fever produced and aggravated in a great degree by their being compelled to live in huts which Surgeon Major Ross has very properly described as "not fit human dwellings." The remarks of the Medical Officer in respect to doing away with compensation on account of dearth of provisions, under the head of food and clothing, are worthy of note. Similar views are, I am aware, held by the Medical Officer of the 11th Regiment N. I., who attributed in a great measure, to voluntary starvation, the inefficient condition of the men of the Regiment on its arrival at Poona from Bhuj. The books and instruments were in admirable order, and the diaries of cases carefully kept. The entire hospital management showed that great care had been exercised on the part of the medical officer in charge and his subordinates.

H. M.'s 5th Regiment N. I.

POONA.—In Medical charge of Surgeons Major H. DAY and R. C. THORP.

Average Strength.....	687	Deaths in Hospital	4
Do. Present.....	636	Do. out of do.	2
Admissions	975	Invalided	33
Daily Sick	23·2	Sick Leave	7

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Belgaum	64·2	2·3	0·6
1876	Do.	187·7	3·7	.....
1877	Poona	139·7	3·1	0·8
	Average.....	130·5	3·0	0·5
1878	Poona	153·3	3·6	0·6

1. The head-quarters up to the 28th November were at Poona; on that date the Regiment moved by train in two detachments to Bombay, and on the 29th embarked on board the steam transport "Simoon" for Kurrachee, where they arrived at daybreak of the 2nd December. Whilst at Poona detachments were sent to Nandgaum, Kirkee, and Ahmednagar. After arrival at Kurrachee, a detachment was sent to Hyderabad.

2. The lines consist for the most part of open barrack rooms with a cookhouse and latrine at the back of each. Number of blocks of pendals 8. The lines and their surroundings, present condition, hygienic and otherwise. Aspect S. W., central street 180 feet broad, side street 50 feet. Height of plinth unequal, even in the same pendal, by nature of the ground. Roof is composed of rafters, bamboos, whole and split, date matting, and mud daubing.

3. There are eight latrines to the rear of the lines. From companies A and B they are respectively 145 and 275 feet off. Distance from other companies 226 and 406 feet. The filth is carried away by bhungees to a distance of about $1\frac{1}{2}$ miles. There are receptacles for bathing water, which are emptied into the filth cart. There are bathing places in the huts of married men. The conservancy of the lines is daily attended to by a Native officer, and is inspected once by a European officer. There are eight sweepers, paid partly by Government, and one filth cart. The Government allow for the sweepers 48 Rupees, and grain compensation as for public followers is paid to each. The Regimental cess is half an anna per mensem for each man, fighting men, and followers. The cart driver is allowed a filth cart, but he supplies bullocks and other necessities. His pay is 22 Rupees monthly, without compensation for dearness of grain.

4. The water supply is abundant, by underground stream. No analysis known. Water is drawn by hand with leathern buckets or jars of earth or metal; distribution is by mussuck or puckal. The well is open, and percolation, lateral, without doubt takes place from waste of waters of bathers and surface drainage during the rain.

5. The clothing is good and sufficient for rains and cold weather, but during the hot weather there should be some regulation permitting of loose white clothing being worn, and that those employed as orderlies be not required to carry coat or pouch (cartouche box). The food is from a large market, so the men have an ample choice for variety and price.

6. The health of the Regiment has been fair; the men are over the average in physique, but as a rule the pay is insufficient, for those who have families, to provide them with a proper amount of nutritive food. Ailments commonly the result of under feeding are frequent amongst the men, who often crowd the hospital. To maintain the physique and proper strength of the men, it is necessary they should consume a certain quantity of wholesome food. To ensure this, a number of caste messes should be maintained for the unmarried men.

7. The climate here is so different to that of the Deccan, that of course the men will suffer somewhat from chills by the damp moist atmosphere of the sea. There has been in 1878 a large fall of rain for Sind, and therefore sooner or later there is sure to be an epidemic of fever or cholera. From what I can learn, the water here is less brackish, and wells more numerous. The increase of water has produced more malaria, as is also the case in Bombay, Poona and other native towns into which water has been introduced, and to me the solution of the problem is obvious, because there is no drainage system to carry off waste water. 629 cases of ague are entered as having been treated during the year, against 553 in 1877 and 779 in 1876. There were 13 cases of rheumatism. Syphilis is not a fruitful source of disease, thanks to Government for starting the lock hospitals, which if worked properly ought to reduce that disease to a minimum. During the year under review there have been 12 cases of syphilis and 4 of gonorrhœa, 16 out of a strength of 686. Blisters of the feet 32. These generally arise from ill fitting boots or careless management, whereby the leather becomes hard and loses the pliability proper to it. In conclusion I would remark that I joined the Regiment on the 14th November 1878, and came with it to Kurrachee. Also that the establishment consisted of no 1st or 2nd Class Hospital Assistants or old hands, even the goorgah was changed before my arrival, and the best man I have since I joined is a Passed Medical Pupil, who having gone through the curriculum of the Grant College, is useful; but he knew nothing of the returns or forms and is a very bad writer.

H. M.'s 8th Regiment N. I.

POONA.—In Medical charge of Surgeon Major T. MILLER.

Average Strength.....	685	Deaths in Hospital	8
Do. Present	595	Do. out of do.	2
Admissions	1,345	Invalided	57
Daily Sick.....	37.2	Sick Leave	13

Years.	Stations.	Rate per cent to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital
1875	Poona	200.1	4.1	0.4
1876	Do.	191.6	4.1	0.2
1877	Do.	155.7	3.8	0.9
	Average.....	182.5	4.0	0.5
1878	Poona	226.0	6.2	1.3

1. The Regiment was stationed at Poona until the 6th November, when the headquarters and 427 rank and file marched for Satara, about 70 miles distant, which it reached on the 13th of that month, having made it in seven marches and one halt, made on the 10th (Sunday), to give the men and families a rest. Nothing particular occurred during the march. On the 31st October a detachment of one officer and 139 rank and file went to Bombay for garrison duty, and on the 2nd November a detachment of one officer and 131 rank and file left Poona for duty at Asirgarh fort.

2. The lines at this station are not at all good, as has been reported by the medical officers in charge of the Troops stationed here for some years back. They are not built of brick and stone, but of wattle and clay, and are not at all in a good state of repair. New lines for a full Regiment are I believe sanctioned by Government, and will be built on a site near the present ones, which is a very good one. The lines are to be built by the Public Works Department and not by the sepoy of the Regiment, as has hitherto been the case. The close proximity of the Sudder Bazaar to the lines is in every way objectionable, and the new ones will be situated farther away. The huts have an average of 850 cubic feet inside, which is rather small. The drainage is natural, and fair of its kind when properly looked after. Gutters run down the sides and middle of the streets to carry off the storm water and sullage from the bathing places; but as the gutters are not lined with brick or stone, the ground gets saturated. The huts have no verandahs and no proper bathing places. There are no cells for keeping prisoners in; at present the Quarter Guard room is used for that purpose. There is no regimental bazaar for supplying food, and the men get supplies from the city and Sudder Bazaar.

3. The lines are kept as clean as possible, under the superintendence of the Quarter Master. The latrines are on the trench system, but are not in very good repair. There is one for the males and one for females, of four or five seats each, and they are screened by bamboo matting on wooden poles; they are much too small for the number of people who have to use them, and the consequence is that a great many go to the fields for the purposes of nature. The trenches are looked after by the Regimental sweepers, and the night-soil is buried in pits dug near the trenches. New and larger latrines are much required, which should be built on a better system than the present ones.

4. The water is taken from wells and a nullah which runs near the lines; it is of fair quality, according to an analysis made a year or two ago, but contains carbonate of lime, and also sometimes vegetable matter. Some of the wells contain water which is too brackish for drinking purposes, and the sepoy only use it for washing. The water would be the better of being boiled and filtered before drinking. The wells dry up considerably during the hot weather, and water has sometimes to be brought from the river Yenna, about a mile off. A better supply of water is much needed for the city and camp, and a scheme for bringing it in from a distance is under consideration.

5. Food has been dear this last year or two on account of the want of rain, and still continues high in price, though plenty is to be got in the bazaars. Rates at this station are much the same as at Poona; some articles are dearer, as wood, wheaten flour, sugar, &c.; and others as rice, ghee, mutton, much the same as at other places. No change has been made in the clothing of the sepoy since last report; the boots still prove a cause of many admissions on the sick list, from

causing shoe bites. Socks might do something to prevent sore feet if the men could be got to wear them regularly. English-made boots have been got for this regiment, but whether they will fit better than native-made ones remains to be seen. Warm under clothing in the cold weather would also do something to prevent the men suffering from bronchial affections and rheumatism.

6. The duties are of the usual kind—guards, orderly duties, drill, &c. These duties are much lighter here than at Poona, there not being so many guards required, or so many orderlies; while at the latter station they had about 4 nights in bed, at Satara the men have about $7\frac{1}{2}$. There are no Jail Guards supplied here as at Poona, which makes it much less severe on the men. The amusements and exercises are of the usual kind for natives. There is a gymnasium on a small scale for those who care about such exercises. Some men make articles of clothing, furniture, and fancy work for the Annual Soldiers' Exhibition held at Poona, and there are Regimental Schools for the children, where they are taught reading, writing, and sewing.

7. There is no proper hospital at this station for the Native Troops. It is merely an ordinary bungalow in the Sudder Bazaar, rented for the accommodation of the sick. A regular hospital is very much required, and if new lines are built, one must be got. The present house is too small and the sick are too crowded, and tents have to be pitched for their treatment; or a number made convalescent who live in their huts in the lines, and attend the hospital for treatment. There is only proper accommodation for six or eight patients, and there is not good accommodation for office, stores or hospital servants. There is only a small latrine in a bad position. It is kept as clean as possible and the filth removed every day to a distance; disinfectants are freely used, but it is much too near the sick room and the servants' houses. There is no separate place for the hospital guard, and they have to sleep in the verandah of the hospital, which is very objectionable. There is no sort of dead-house, or proper cooking room, and altogether it is very inconvenient for an hospital. The building itself is in good repair, and kept as clean as possible.

8. The general health of the Regiment has been very fair during the year. The most prevalent disease has been malarious fever, the usual cause of the greatest number of admissions in Native Regiments. A good many cases were admitted two or three times over in the year, as any over work, or exposure a little more than usual, seemed to bring the fever back. As reported last year, a good many of the men, especially those having families, suffered from dearness of provisions, and I have no doubt lost strength on that account, and also from their using provisions very often of inferior quality, as well as being deficient in quantity. The men who were employed in line building for some years in Poona, do not seem, many of them, to have got over the effects of that unusual sort of work, and although a good many have been already invalided, still a number remain, who, though fit for ordinary station duties, would have to be left behind if the Regiment had to go on active service. Many of them are old and worn-out, though their service has only been for ten or twelve years, and those enlisted about the time of the mutiny look as if they had 30, instead of 20 years' service, from their having been at that time not so particular as to the age of recruits, and from the enlisting of men of inferior physique. A good many recruits have been lately got from the north of India, who are generally bigger and more muscular than the sepoys from the Deccan, but at present the change of climate seems to affect many of them, as well as perhaps the food they get, and many of them suffer from fever, boils, and bronchial affections. Taking the Regiment generally, the physique may be considered good, and will now, I believe, go on improving as the older men are got quit of, those of over 32 years' service being now pensioned off without any trouble.

9. The climate of this station is considered very good, but as the Regiment has only been here a short time, it is not possible as yet to say what particular effect it may have on the general health. At Poona it suffered considerably from ague, and since arrival here, that complaint still affects the men a good deal. The lines here are not so well built as at Poona, and do not afford the same amount of shelter from the cold at night.

10. The total number of cases treated was 1,377, which, compared with the number for the previous year, 961 cases, gives an increase of 416. This increase is due chiefly to the greater number of malarious fever cases under treatment, 917, of which 895 were discharged to duty. The other most prevalent diseases have been bronchial catarrh 28, of which 24 were discharged; contusions of the upper and lower extremities 87, and 85 discharged; diarrhoea 25, all discharged; colic 26, all discharged; acute dysentery 30, of which 29 were discharged;

dyspepsia 21, all discharged; boils 30, and 27 discharged; itch 25, and 21 discharged; conjunctivitis of a mild character 14; muscular rheumatism 14; chronic rheumatism 21, and 20 discharged; primary syphilis 17, and 14 discharged. Of acute hepatitis 5 cases, and 4 discharged; burns and scalds 6, which were of a mild character and all discharged. Only 1 case of cholera occurred, which was fatal. The average number of cases of ague in the months of June, July, and August, was about 100 under treatment for each month. The average daily number of sick was 37·2, against 24·3 for the year 1877. On many occasions the sick list rose as high as 58 or 60. The rate per cent. of admissions to average strength was 226·0, the rate per cent. of daily sick to average strength 6·4, and the rate per cent. of deaths in hospital to average strength 1·3.

11. The number of deaths which took place was 8; of which 4 were caused by remittent fever, 3 from acute and chronic bronchitis, and 1 from cholera.

Epidemics.

12. There has been no epidemic in the regiment during the year.

13. This has been attended to as much as possible, a good many of the families left the regiment and went to their villages for a time, and on Vaccination and re-vaccination. this account a smaller number of children are shown on the list; 30 being the number successfully done in the course of the year.

14. The total number invalidated for discharge was 34. The causes were, general debility 8, ague and worn out 9, ague and rheumatism 1, Invaliding and its causes. chronic bronchitis 2, palpitation and worn out 5, inguinal hernia 2, bronchial catarrh 2, chronic rheumatism 2, defective eyesight 2, and deafness 1. Twenty-three men were discharged with gratuity.

15. As will be seen from what has been previously stated, the general condition of the lines, hospital, and the buildings connected therewith, new ones Requirements and recommendations. are much required, and have, I believe, been sanctioned for a full Regiment, instead of a strong wing as hitherto; they are to be built by the Public Works Department and not by the men of the regiment, as has been the case previously. A new hospital is also much required, as the present building is not at all suitable in many ways, as has often been reported.

16. Nothing particular under this head more than has been already stated. The usual class of diseases has been under treatment. Quinidine and Special observations. cinchonidine have been used in the treatment of the greater number of cases of ague, but except in the very mild cases, it is not to be compared with quinine, which in many cases has ultimately to be depended on.

Inspection by Deputy Surgeon General BEATTY.

The hospital and lines were frequently inspected during the time the regiment was located at Poona, and again at Satara on the 6th March 1879. The lines occupied by the Regiment at the latter station are extremely bad, and have repeatedly been reported as unfit for the sepoys to live in. The huts should be removed and replaced by new ones, having plinths and better ventilation. The old site being on an elevation is unobjectionable, and possesses excellent natural drainage. Conservancy is carefully attended to, and the latrines, which are on the trench system, are kept clean. Water supply is always deficient in the hot season. The general health of the regiment has been fair, but the physique of many of the men in the regiment is below the usual standard. The arrangements for hospital accommodation are bad, what is used for the purpose being a small, hired, ill ventilated building in the middle of the Sudder Bazaar. A new hospital is absolutely necessary. The present building is wholly unfitted for the accommodation of sick, and were an epidemic to occur, the medical officer would have no place to treat them. The hospital books and records were very carefully kept.

H. M.'s 12th Regiment N. I.

DHARWAR.—In Medical charge of Surgeon H. W. BOYD.

Average Strength	710	Deaths in Hospital	8
Do. Present.....	702	Do. out of do.	2
Admissions	708	Invalided	17
Daily Sick.....	18·4	Sick Leave	6

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Dharwar	52·9	2·7	0·5
1876	Do.	47·1	2·1	0·6
1877	Do.	80·3	2·2	0·9
	Average.....	60·1	2·3	0·7
1878	Dharwar	100·8	2·6	1·1

1. The regiment was stationary up to December, when it received orders to march to Rajkot; three companies leaving on 10th December and the head-quarters on the 24th. One detachment, consisting of 54 men, was sent on duty to Dhopdall near Gokak to guard some prisoners there. It returned to head-quarters on the 26th June 1878.

2. The lines have been fully described in previous reports. They were clean and well kept, the surface drains being in good repair. The houses are well ventilated and have a small garden in front of each, with a sufficient number of trees planted to absorb any stagnant water. The regimental bazar, situated to the rear of the lines, has been satisfactory in every respect, and was kept in a proper sanitary condition.

3. The trench system was the one in use, and was found to answer very well. The improvements introduced last year have been found of great benefit. Crops of vegetables were grown over the site of the latrines. The working of the establishment has been carefully attended to.

4. The water supply is ample. It is obtained from four wells, the Purwarees having one, the Hindoos and Mussulmans a second, a third being principally used by the Hospital Establishment and the European Officers. The water from all the wells is good and abundant with the exception of the one built last year near the hospital, which, in consequence of its not being sufficiently deep, runs dry in the hot season.

5. Grain food was abundant but dear, vegetables plentiful and cheap. The highest grain compensation was in the month of July, when it reached Rs. 6-2-7, and the lowest in the month of December, when it was Rs. 1-15-10. The clothing of the men seems to be quite sufficient.

6. The duties of the men do not seem to be too heavy. The average consecutive nights in bed were $7\frac{3}{4}$ for the year. There is a good gymnasium which they resort to. They have also a very good workshop where, when not otherwise employed, they are occupied at tailoring, boot making, and carpentry, &c. For some years past they have obtained prizes at the exhibition held in Poona.

7. The hospital has been fully described in previous reports. It has been kept clean and neat, and its conservancy arrangements have been very carefully carried out. The well that was made near the hospital last year is found not to be sufficiently deep, and consequently does not yield a proper amount of water for the hospital establishment. This has been brought to the notice of the Executive Engineer, and I believe steps are being taken to have it deepened.

8. During the year the general health of the men has been very fair. Their physical condition is good. Notwithstanding the number of Mahrattas, Purwarries, Mochies, &c. in the regiment, I believe it can compare very favourably with any other in the Bombay Presidency.

9. There is a very marked increase in the number of admissions into hospital as compared with the year previous. 708 cases altogether were admitted, compared with 482 for 1877. This I think is accounted for by the dearness and insufficiency of food owing to the famine, as well as to the variableness of the weather.

10. Out of 708 cases admitted, 333 were for quotidian ague, 42 for chronic rheumatism, 35 for syphilis, and 82 for injuries, principally contusions of the lower extremities. Diseases of the digestive system gave 53 admissions, 27 of the number being for dysentery, and 6 for diarrhoea. Five cases of cholera occurred in the month of April, two having a fatal termination.
- Details of treated.
11. Nine deaths occurred during the year—2 from cholera, 2 from pneumonia, 2 from dysentery, and 1 each from fatty degeneration of the heart, from diarrhoea and from acute bronchitis.
- Mortality and its causes.
12. Cholera appeared in the month of April, five men were attacked, three of whom made a good recovery. Every precaution was taken to prevent the spread of the disease. No cases of small-pox occurred during the year.
- Epidemics.
13. Vaccination was very carefully attended to, and the result was very satisfactory. Thirty children were primarily vaccinated and six recruits re-vaccinated successfully during the year.
- Vaccination and re-vaccination.
14. Seventeen men were sent before the Invaliding Committee and were invalided, four on account of chronic rheumatism, one for irritability of bladder, one for secondary syphilis, one for opacity of right cornea, nine for debility and old age, and one for acute mania.
- Invaliding and its causes.
15. I have no other observations to make further than those I mentioned in my last annual report in reference to the want of shutters, &c. for the hospital and especially for the ophthalmic ward.
- Requirements and recommendations.

Inspection by Deputy Surgeon General WYLLIE.

Inspected 22nd February. The sick occupy the hospital lately vacated by the 28th, and have sufficient and suitable accommodation. Quarters for 2nd class servants are wanting, the shed lately in use having fallen down. The Commandant has however promised materials, and the hospital bearers will be employed to repair the walls pending more satisfactory arrangements. The lines are the best in this circle, and surroundings, sanitarily, are all favourable. Since the regiment arrived there has been some increase of sick under ague, otherwise health at date is normal.

H. M.'s 13th Regiment N. I.

MALEGAON.—In Medical charge of Surgeon S. B. HALIDAY.

Average Strength.....	694	Deaths in Hospital.....	4
Do. Present	663	Do. out of do.	5
Admissions	703	Invalided	54
Daily Sick	22·6	Sick Leave.....	8

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Ahmednagar	80·5	2·2	0·3
1876	Malegaon and Ahmedabad	115·7	3·1	0·7
1877	Do. do.	107·1	2·5	0·6
	Average...	101·1	2·6	0·5
1878	Malegaon	106·0	3·4	0·6

Location and movements of Corps.

1. The head quarters and main body of the regiment was stationed during the year at Malegaon. The following detachments were employed on Trecasury Guard duty :—

Detachments during 1878.

Place.	Strength.	Period	
		From	To
Yeola	18	1st January	24th May.
Niphad	18	Do.	Do.
Sinuare	18	Do.	1st June.
Nandgaon	18	1st February	24th May.
Sattana	18	15th March	Do.
Chandward.....	20	29th do.	Do.

The head quarters and right wing marched from Malegaon on 21st November 1878, *en route* to Mhow. The march had no special effect on the health of the men, the camps were good, and healthy, and water and provisions good and plentiful. Twenty-one shoe bites occurred, and two deaths, one from fatty heart in a very fat elderly man, who was not equal to the exertion of marching; he died suddenly and unexpectedly, not having previously complained. The other was from pneumonia supervening on ague in a delicate badly nourished recruit. The weather was unusually hot during the greater portion of the march, the last few days only being somewhat cold.

2. These have been fully described previously, and no alterations have been made during the year under consideration. The lines were kept in a good state of repair, and cleanliness was carefully attended to. The bazaar, which is close to the lines, was also kept clean; there was some over-crowding, but this produced no ill effects.

3. Trench latrines were used, and were most satisfactory. When they were closed up, the ground over them was cultivated, and new trenches dug close by.

4. Previous to the monsoon the supply of drinking water in the wells was small but sufficient, as a sentry was placed over each well to prevent its being used for bathing or washing, for which purposes water was available in the river Moosum, which flows close to the lines. The drinking water is of good quality.

5. Food was of fair quality though dear and somewhat scarce on account of the famine, until after the monsoon, when it became cheaper. This had no appreciable effect on the health of the regiment, but I think it is most probable that married sepoy must have deteriorated in strength and energy for want of sufficient food, as some of these sepoys have several children to provide for.

6. These consisted of the usual routine duties of a cantonment, and had no special effect on the health of the sepoys. There is a good well-conducted gymnasium attached to the regiment, where the sepoys are taught various exercises, and all recruits have to go through a course.

7. These have previously been described. They were kept in good repair, and clean. The hospital is too small for a regiment, and if there was much sickness there would not be room for the sick. Two new rooms have been built for 1st and 2nd Class Hospital Assistants, and four for 2nd class servants, also a new guard room is in course of construction.

8. The general health and physique of the regiment was good.

9. The heavy monsoon, viz. 32 inches and 56 cents, seems to have caused an increase in ague, as 258 cases were treated, against 202 in 1877. No other special effect was observed.

10. The total number of cases admitted during the year was 703, against 662 in the previous year, showing an increase of 41 over 1877. The chief diseases were the following, arranged in the order of their frequency. Ague 258, blisters of the feet 47, contusion lower extremities 40, venereal diseases

38 (of which 31 were syphilis primary and 7 gonorrhœa), conjunctivitis 34, dysentery 31, bronchitis 25, diarrhœa 24, rheumatism chronic 23, boils 17, guinea worm 13, febricula 13, sprain of ankle joint 12.

11. Four deaths occurred in hospital during the year, one from excess of fat of the heart, one from malignant cholera, one from ague complicated with pneumonia (this was a young, delicate badly nourished recruit), and one from fatty degeneration of the heart. This man was old, very fat and suffered from slight leprosy. The fatigue of marching proved too much for him and his heart failed. Five deaths occurred out of hospital, two of which were on furlough and two on sick leave, and one man who was sent up to the General Invaliding Committee for nodes on the tibia, died at Poona soon after the Committee. Four of these deaths were caused by ague, and the cause of death of the fifth was not reported.

12. Cholera was rather severe and fatal in the town of Malegaon, but only one case occurred in the Regiment, which proved fatal from secondary fever, in which his head was much affected. Every precaution was adopted to prevent the spread of the disease, the men were prevented from going into the town, and the dwelling occupied by the patient disinfected carefully, as also the contagious ward in which he was treated; all his discharges were disinfected, and then buried.

13. Forty-three primary vaccinations were performed, and were successful, and thirty re-vaccinations, which were successful. All recruits are vaccinated. Only three children remained unprotected, and these were too young for the operation.

14. Fifty-four men were invalided; 43 from old age, 5 physical debility, 1 nodes of tibia, 1 psoriasis inveterata, 1 debility, 1 varicose veins, 1 chronic rheumatism, 1 chronic conjunctivitis. Of these 49 were pensioned, and 5 discharged with gratuity.

15. The hospital requires to be enlarged, as it is not sufficient for a full regiment if there was much sickness.

16. The ague was of a mild form generally, and yielded to the usual treatment. The cinchona alkaloid acted fairly, but in some cases caused irritability of the stomach, when it had to be discontinued and quinine substituted; it also sometimes seemed to irritate the bowels. The conjunctivitis is said to be caused by a small fly which is found on the new bajree and jowaree. The disease was easily cured by mild astringents. The bowel complaints were not very serious or troublesome, though some of the cases of dysentery tolerated ipecacuanha badly, and other treatment had to be adopted. The chest affections occurred mostly amongst old men, and were not severe. Most of these men were invalided at the end of the year. To prevent blisters of the feet, boots ought to be made to fit well, especially as the men do not wear socks.

Inspection by Deputy Surgeon General WYLLIE.

Inspected December 26th, 1878. This regiment was stationed at Malegaon up to 21st ultimo, when the head quarter wing separated, arriving at Mhow 13th instant. At the former station the men were healthy, as expressed in the fact that there were only 2 casualties,—cholera, and excess of fat of heart. As yet they have scarce had time to settle in their present quarters, which are similar to those of the 6th, which they adjoin, and with the same inherent defects, but occupying a better raised site. Hospital ample and excellent, and I found all arrangements suitable and sufficient for sick, the number of which (25) compares unfavourably for the moment with that of the 6th, as the result of the march, during which there were 2 deaths, from heart disease and ague. Lines clean and tidy, as well as surroundings; permanent latrines in use, but so inconveniently distant that pans have to be placed near the lines at night for the use of families.

Left Wing H. M.'s 13th Regiment N. I.

MALEGAON.—In Medical charge of Apothecary T. ROBINSON.

Strength, 289.

1. The left wing was stationed in Malegaon during the entire year 1878. After the departure of the head-quarters to Mhow, the left wing took up the lines occupied by the head-quarters, and on the 28th February 1879, marched for Mhow, and arrived on the 16th March 1879.

Location and movement of Corps.

2. The lines occupied by the left wing, the huts are clean and are in excellent sanitary condition, and in good repair. The sanitary condition of the bazaar is well looked after.
3. The trench system of latrines is in use, and works most satisfactorily. One Conservancy. sweeper was left with the left wing hospital after the departure of head-quarters.
4. The supply of water is generally sufficient and of good quality.
5. The general health and physique of the wing was good.
6. The total number of cases treated from 21st November 1878 to 31st December 1878 is 39. The chief diseases were the following, arranged in the order of their frequency:—ague 19, syphilis primary 8, colic 2, diarrhœa 2, chronic rheumatism 2.
7. The mixed cinchona alkaloids has been substituted for quinine in the treatment of ague. It answers very well in mild cases of this disease, but in the severe form of ague it fails, and I have found quinine succeed generally in checking the disease.

H. M.'s 14th Regiment N. I.

BELGAUM.—In Medical charge of Surgeon Major D. E. HUGHES, M.D.

Average Strength	700	Deaths in Hospital	16
Do. Present	636	Do. out of do.	3
Admissions	726	Invalided	30
Daily Sick	27.9	Sick Leave	16

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Kolhapur	77.5	3.5	0.8
1876	Belgaum	82.6	3.5	3.1
1877	Do.	73.4	3.5	0.6
	Average.....	77.8	3.5	1.5
1878	Belgaum	114.1	4.4	2.5

1. The regimental head-quarters remained at Belgaum, while a company, one hundred strong, was on detachment duty at Kaladghi.
2. Since last report no alterations have been made in the lines, which are kept in good order.
3. The system of conservancy is the same as that described in previous reports. The latrines are well looked after, but nothing has been done towards an improved disposal of the ablution water.
4. The water supply is plentiful and good. Since last report two new wells have been sunk by the civil authorities at the Nagjhirl. These wells are quadrangular in shape, lined with masonry and fenced with a low wall. They are not yet fitted with wooden covers, nor is there a masonry platform round them. The water from these wells is used by the high caste sepoys, being highly appreciated by them. Colonel Hill, the Commandant, has generously supplied funds for the sinking of wells for the use of the "Parwari" and other low caste men. These wells, which are circular in shape and lined with stone, are rapidly approaching completion.
5. Food is becoming cheaper, and it is anticipated that the price of grain will fall yet lower.

6. Ordinary parades and guards at head-quarters, and occasional escort in charge of treasure, commissariat stores, &c. The amusements of the men are racing, wrestling, gymnastics, jumping and single stick. Duties, exercises, and amusements. A number of the younger men have taken kindly to cricket. The duties during the past year have had no prejudicial effect on the health of the men, and the exercises in which they voluntarily engage have done much to improve their physique.

7. The principal drawbacks to the hospital, which have been often described, are—its darkness; the want of an observation ward in which cases of infectious disease might be segregated, pending the pitching of a tent or the erection of a shed; the want of a ward for the treatment of eye cases. Such cases are now treated in a confined little room, which can only be darkened by closing the door and window and shutting out air as well as light. Hospital and its surroundings.

8. This has been a sickly season, and a large proportion of the men have suffered recently from fever, nevertheless the physique of the regiment is decidedly good and the corps is in every way fit for active service. The Sikhs, Punjaubies and Hindoostanics are the finest looking men, and take most of the prizes at the regimental sports; but there are many stalwart men and likely youngsters among the sepoys enlisted within the limits of the Bombay Presidency. General health and physique.

9. The rainfall last year (51 inches and 25 cents) was much in excess of that of the three previous years, and fever was very prevalent. Influence of climate or local circumstances on health.

10. The admissions were 726, the large number of 422 being for intermittent fever. For this disease the admissions in 1877 were 134. Twenty-one Details of treated. cases of dysentery and 16 of diarrhoea were treated; 14 cases of venereal and 26 of eye disease were admitted.

11. There were twelve deaths in hospital; scurvy, lung disease, paraplegia and rheumatism and wound, each caused one death, and fever, cholera, diarrhoea, dysentery, phthisis pulmonalis and all other causes two each. Mortality.

12. Thirty-five children have been successfully vaccinated. There were no re-vaccinations. Vaccination.

13. Twenty-nine men were pensioned and one discharged with gratuity. The disabilities for which the men were invalided were, old age and infirmity, lumbago, defective vision, and palpitation of heart. Invaliding.

14. Sixteen men were granted leave on medical certificate, the diseases for the recovery from which change of air was considered necessary being dysentery, diarrhoea, debility, bronchitis, and kidney disease. Medical certificate.

15. I have not had sufficient experience of the mixed cinchona alkaloids to enable me to form an opinion regarding their alleged antiperiodic virtues. Treatment when special.

Detachment H. M.'s 14th Regiment N. L. I.

KALADGI.—In Medical charge of Surgeon K. A. DALAL, M.B.

1. One company of the 14th N. L. I. was at this station from the 1st of December 1877 under the command of a Native officer. This Location and movements. company will be relieved on 10th of January 1879 by a company of 17th N. L. I.

2. The lines are composed of two rows, being a portion of those used formerly by the Southern Maratha Horse, and are admirably situated as regards site, being very nearly a mile away from the native town and in a south-westerly direction. The drainage is natural and the surroundings good. The huts are very much like those generally used for native troops. Each hut has sufficient accommodation for a man and his wife, but is certainly not large enough for a man with a large family. Ventilation is carried on by means of doors and roof, which is single tiled. The lines have sufficient accommodation for one company only, and they are clean and in good repair. Lines, &c.

3. There are no latrines in connection with the lines, and the men and their families are obliged to go to the jungle to obey the calls of nature. It is extremely desirable to build latrines on the trench system. Conservancy. The native officer in charge of the detachment is very strict, and sees that no refuse is allowed to accumulate in or about the lines.

4. Water-supply is good and sufficient, and is derived from the river close by, there being no wells in the vicinity of the lines.
- Water-supply.
5. Food at present is good, abundant and cheap, but during the rains it was not so cheap. The present prices are:—wheat 12 lbs. per rupee, Food and clothing. jowari 35 lbs., bajri 33 lbs., rice 16 lbs., clothing as usual.
6. The ordinary duties consist of drill five days in the week, Treasury and Quarter Guard, line pickets, &c. Amusements, none. No bad effects are Duties, &c. discernible from the duties.
7. There is no regular military hospital nor a special ward for the military patients. Hospital, &c. The rent of the hospital building is paid by the Military Department, and the repairs are conducted by the Civil Department, and in it are treated the military and police cases and the civil paupers. My predecessors have year after year reported about unsuitability of the hospital building, but I am sorry to say nothing has been done. The hospital contains only one ward, which could accommodate ten patients, and is generally overcrowded. It is situated between the town and the sudder bazaar, and is very convenient to the civil and police-patients, but it is very far from the Native Infantry Lines. Ventilation is carried on by means of doors, windows and ridge of roof. Hospital itself is clean and in very good repair, but the latrine in connection with it has fallen down, and a new one will soon be built by the Public Works Department.
8. General health good, and the physique of the men also very good. Most of them are capable of undergoing the hardships of warfare.
- General health, &c.
9. No bad effects can be traced to the influence of climate on the health of the men.
- Influence of climate, &c.
10. 114 is the total number treated as compared with 129 during the year 1877. Details of treated. Ague, chronic rheumatism, syphilis, gonorrhœa, dysentery and diarrhœa were the principal diseases treated. Ague was treated by quinine, cinchonidine, arsenic, and strychnine. Either of the latter two drugs was sometimes added to the quinine or cinchonidine mixture. In dysentery, acute, large doses of ipecacuanha do not succeed very well with natives. I find better results follow by Dover's powder and chlorodyne after castor oil with opium.
11. There were three deaths during the year :—one from cholera, one from scurvy, and one marked under the heading of chronic rheumatism, but died Mortality, &c. of acute dysentery. The scurvy case was very obstinate. The man would not eat vegetables, and often threw away medicines.
12. There was no epidemic during the year in the station, though a few sporadic cases Epidemics. of cholera occurred in January and March.
13. No vaccinations were performed, as all men were vaccinated before.
- Vaccination.
14. Three men were invalided—one for cataract, one for heart disease, and one for old age and general debility. Seven men went on sick leave—four Invalidings, &c. from ague, two from chronic rheumatism, and one from lung disease.
15. None.
- Requirements and recommendations.
16. No special treatment.

H. M.'s 15th Regiment N. I.

AHMEDNAGAR.—In Medical charge of Surgeon Major E. P. BURROWS.

Average Strength	703	Deaths in Hospital	15
Do. Present	686	Do. out of do.	1
Admissions	853	Invalided	41
Daily Sick.....	23·9	Sick Leave	21

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Ahmednagar	85.0	2.4	0.3
1876	Do.	67.8	3.3	0.7
1877	Do.	101.3	2.9	1.2
	Average...	84.7	2.9	0.7
1878	Ahmednagar	124.3	3.5	2.2

1. The whole regiment was at Ahmednagar (where it had been stationary for the previous two years,) until June, when the left wing was detached to Poona. This wing remained in Poona until the 23rd November, when it moved by rail to Ahmedabad, arriving on the 26th. The head quarters left Ahmednagar on the 16th December and arrived on the 19th. The regiment occupies the lines previously tenanted by the 1st Grenadiers.

Location.

Lines.

2. The lines at Ahmednagar were in a fair state of repair and clean and well drained.

3. The conservancy of the lines was considered fair. The regimental latrines well situated and kept clean, but were complained of by the men as too far from the lines (280 yards). Men were often found

Conservancy.

polluting the ground in front of their huts, and in the immediate neighbourhood of the hospital and lines, and the erection of urinals in convenient places was recommended to obviate this. The hospital latrine was kept clean. Dry earth was used, but the system could not be perfectly carried out, no means of separating the urine and fæces being practicable.

4. The water supplied to the lines from the Kapurwarree aqueduct was of good quality and abundant, except for about a month in the hot weather, when there was a slight scarcity.

Water supply.

5. In the commencement of the year the grain forming the principal food of the men was dear, but of a fair quality. Towards the close of the year grain became cheaper.

Food.

6. Duties were severe for some time after the detachment of the left wing went to Poona in June, the men getting but three nights in bed. In November a reduction of guard duties allowed them four nights.

Duties.

7. The hospital was in good repair, and afforded sufficient room for the sick during the year, except when a fire accident at the theatre suddenly sent in twenty-two "burn" patients. The cantonment hospital

Hospital.

was then utilized, which arrangement prevented any overcrowding. The hospital compound and surrounding ground were clean, open, and well drained.

General health.

8. The general health of the regiment was good, and the physique of the majority of the men of fair standard.

9. The season was normal, the rainfall being about the average, and regular. Its influence on the sick list was not very marked. The percentage of sick to strength at Ahmednagar during the first five months

Influence of climate.

of the year with that of the succeeding wet months is given below:—

Months.	Rain.		Percentage of admissions to strength.	Average.
	In.	Cents.		
January	7.7	7.7
February .....	.....	.....	5.1
March .....	.....	.....	5.9
April .....	.....	71	6.5
May .....	.....	8	13.3
June	1	78	10.6	9.8
July	3	69	8.9	
August	7	94	9.1	
September	6	88	10.2	
October	2	84	10.6	

10. The number of admissions for the whole regiment during the year was 853; the deaths 16. These numbers contrast unfavourably with those of the previous year, when the total of sick was 593, and the deaths 7. Of the deaths during the past year however 8 were accidental; if these be omitted, the percentage of deaths from sickness is less than shown in 1877.

At the head-quarters at Ahmednagar the cases treated were reported to be generally of no special interest; they consisted chiefly of intermittent fever and a few of fever of a remittent type. One of the latter died, and post-mortem examination disclosed nothing characteristic of typhoid. Venereal affections were noted to be rather prevalent. Sixteen rank and file and 6 followers were badly burned by a fire which occurred in a theatre in May. Of these 8 men and 5 followers died from shock and the extent of their injuries; the remainder recovered, but the cicatrices caused one sepoy of 32 years' service to be invalided. In the wing in Poona between the 1st June and 23rd November, out of an average strength of 200, there were 262 admissions into hospital, 193 of which were from intermittent fever. Dysentery also appears to have been somewhat prevalent there, 14 cases with one death having been returned under this head. A fatal case of cholera also occurred there in August. Some of the cases of intermittent fever appear to have been of an intractable nature; nine men having been sent on sick leave for this cause. The wing for some time during the rains encamped in tents near the gymkhana ground.

11. Total number of deaths 16; 8 the result of a fire as above mentioned, 2 cholera (1 at Ahmednagar and 1 at Poona), 2 dysentery (1 also at each station), 1 remittent fever, 1 pneumonia, 1 from renal calculi (uræmia), and one death occurred on sick leave from anæmia.

Epidemics.

12. There were no epidemic diseases.

13. Vaccination from arm to arm was maintained at the hospital throughout the year, all children born in the lines and the regimental bazaar being vaccinated at an average age of two months. New recruits whose marks were considered unsatisfactory were re-vaccinated.

Vaccination.

14. Forty-one men were invalided. Of these 38 were Hindoos, and 3 Mahomedans; 11 were above 32 years in service, and 30 had served for above 20, and under 23 years.

Invaliding.

Requirements and recommendations.

15. The recommendations made in the previous year's report have not been carried out: they are still considered necessary.

Inspection by Deputy Surgeon General WYLLIE.

Inspected January 24th, 1879. Arrived by wings in November and December last, from Poona and Ahmednagar; located in the lines lately vacated by the 1st Grenadiers, which are in satisfactory order, and afford better accommodation than average. Hospital suitable, ordinarily ample, but in need of repairs. There is no contagious ward here as elsewhere, a want that should be supplied, and one building of two rooms would answer for both native corps close as the hospitals are. I realized thorough efficiency in all the arrangements and details of this hospital, which has a much better establishment than usual, and am well satisfied with the careful treatment and attention bestowed on the sick.

NORTHERN DIVISION.

Average Strength Present during the year.....	8,264
Average Daily Sick per cent. to the Average Strength Present ...	5.0
Ratio of Mortality per cent. to the Average Strength Present	1.6

H. M.'s 2nd Regiment Light Cavalry.

DEESA.—In Medical charge of Surgeon-Major A. BARRY, M.D.

Average Strength	491	Deaths in Hospital	3
Do. Present.....	478	Do. out of do.	3
Admissions	487	Invalided	19
Daily Sick	8.3	Sick Leave	4

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Deesa and Rajkot.....	83.2	3.1	0.4
1876	Do. do.	74.8	2.4	0.4
1877	Do. do.	65.6	2.6	0.6
	Average...	74.5	2.7	0.5
1878 .....	.....	101.8	1.7	0.6

1. Head-quarters of corps remained at Deesa during 1878. Owing to scarcity of supplies between Rajcote and Deesa, the 3rd Squadron was not relieved. Fifteen sabres, relieved monthly, were on outpost duty at Palanpur. On 24th April one troop, strength as per margin, marched from Deesa to join 1st Lancers at Bombay *en route* to Malta and Cyprus. On 22nd September they returned from the latter and proceeded to Poona with the Lancers, where they remained till the end of the year.
- | | |
|-------------------------|----|
| Location and movements. | |
| European Officer | 1 |
| Native Officers | 3 |
| Rank and File..... | 79 |
| Total... | 83 |

2. Under this head there has been no change since last year. Sullage from family quarters percolates into ground in front of men's houses. It is very doubtful if this is a hygienic measure, as the trees are not sufficient to absorb the liquid refuse; practically the result is a continual moist soil, favouring the generation and evolution of miasm.

Conservancy.

3. Satisfactory. No alteration since last year.

Water supply.

4. Abundant and excellent.

Food and clothing.

5. See report for 1877.

Duties, &c.

6. See report for 1877.

Hospital, &c.

7. Hospital excellent in every way.

General health and physique.

8. General health very good; physique very fair.

9. Including the sick of the Rajcote squadron, the causes of admission were as follows,

Details of treated.

viz. ague, quotidian 242, tertian 5, quartan 1, febricula 7, remittent 1; small-pox 2, cholera 3, rheumatism 13, syphilis primary 3, secondary 1, lumbago 3, conjunctivitis 14, catarrhal ophthalmia 1, inflammation of ear 1, iritis 1, ulcer of cornea 1, respiratory affections 8, scurvy 1, gumboil 2, tonsillitis 1, dysentery 16, diarrhoea 10, dyspepsia 3, colic 12, hæmorrhoids 1, inflammation of gum 1, simple enlargement of liver 1, orchitis 2, dropsy of knee joint 1, abscess 7, psoriasis 1, eczema 2, ulcers 7, boils 24, whitlow 1, tinea tonsurans 1, chilblain of hand 1, pemphigus acute 1, general debility 3, burns and scalds 1, sprain of wrist 1, fracture compound of tibia 1, sprain of ankle 2, of knee 1, contusions 53, neuralgia 2, scabies 2, fracture of fore arm 1, poison wound of lower extremity 1, other causes 11.

10. At Deesa there was one death in hospital from acute diarrhoea and one out of

Mortality and its causes.

hospital from valvular disease of heart. At Rajcote two deaths are recorded, one of cholera and one of dyspepsia. One man died in Poona, cause unknown, and another on furlough in Hindostan, of liver affection.

11. At Deesa amongst the families and followers mild small-pox was prevalent in March, April, and May. Total admissions amounted to 22, as follows:—males 8, females 2, children 12. Only one death, the wife of a sowar. There were two cases of malignant cholera, one a sowar's daughter, the other the wife of a syce. In both cases the urine was suppressed for over 48 hours, re-action imperfect, and considerable secondary fever with intercurrent diarrhœa. Convalescence was established after 17 days' treatment.

Vaccination. 12. Thirty-nine children were successfully primarily vaccinated, and fifteen persons successfully re-vaccinated.

13. The causes of invaliding in whole Regiment were as follows, viz. :—General debility and worn out 15, fracture tibia compound 1, concussion of brain 1, total 17. Two men were discharged with gratuity.

Inspection by Deputy Surgeon General BEATTY.

Only a portion of this regiment, viz. the troop which returned from Cyprus and proceeded to Poona in September last, was inspected along with the 1st Lancers on the 3rd of November last. The head-quarters with remainder of the regiment arrived during the period of annual tour. The medical officer considers that the sullage from family quarters percolating into the surrounding ground is likely to create miasma. A more perfect system of drainage to carry off the waste water would be desirable. Conservancy is satisfactory and the water supply excellent. General health of the regiment was very good. The hospital was found in excellent repair, and its management generally all that could be desired.

Inspection by Deputy Surgeon General WYLLIE.

November 16th, 1878.—My inspection was satisfactory, alike as regards hospital arrangements and the conduct of its duties, as well as in respect of the condition and cleanliness of the lines generally. No alteration in hospital or offices since last visit, which are all in good repair, very suitable, and amply sufficient. Health shows only a fractional increase in daily sick to date, as compared with the same period of previous year, notwithstanding a very considerable addition under ague from exceptionally heavy rainfall. Nothing unusual has occurred throughout. The system of removal of urine from family quarters by pucksals, as formerly in practice, has been again resumed under regimental arrangement, the only instance in the circle in which this salutary measure is adopted: other sullage being led out from the huts to trees planted close by, as done elsewhere.

H. M.'s 3rd (Queen's Own) Regiment Light Cavalry.

NEEMUCH.—In Medical charge of Surgeon Major C. J. F. S. MACDOWELL.

Average Strength	484	Deaths in Hospital	1
Do. Present.....	455	Do. out of do.	1
Admissions	992	Invalided	36
Daily Sick.....	18·4	Sick Leave	12

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Neemuch	116·9	3·6	0·2
1876	Do. and Nusseerabad...	133·8	3·5	0·4
1877	Do. do. ...	103·8	2·8	.....
	Average...	118·2	3·3	0·2
1878	Neemuch	218·0	4·0	0·2

1. Two squadrons constituted the head-quarters at Neemuch. Another one goes to Nussceerabad and is changed every two years. The whole Location and movements. Regiment marched in four detachments for Deesa at the end of the year, where it arrived safely.

2. The system of building in these lines is, as usual, the abominable one of "back to back." Miserably small and low huts, court-yards with private latrines for high caste families (a very bad system); dunghills formed in consequence, on the flanks, where sweepings are thrown. All cesspools for bathing water, &c. have been ordered to be filled in and the water led to trees planted, at my own expense, on the system of Deputy Surgeon General Wylie, outside the court-yards (*vide* 3, conservancy). The latrines* are much too close to the wells. New ones are sanctioned (*vide* 4, water). The site of the lines is to east of cantonment. Number of blocks, 10. Aspect north and south. Width of central and cross streets as follows: one centre street 819 feet, four parallel ones 65 feet, and six of 21 feet width, not raised on plinths. Ventilation through tiled roof. There are great differences between the size of the different houses and court-yards. There no verandahs, but court-yards which measure, on an average, 12 by 11 feet, much too small.

3. Very insufficient. Filth is collected from the houses of married people and thrown into a maidan, but not all removed till long after noon. Conservancy. Private latrines still exist in married people's court-yards. All cesspools, which still remain, are to be opened up and filled in, after the cholera ceases. They are now not used, as the water, &c., is diverted to the trees outside. There were no funds available for planting these. I had to do it myself. Not nearly enough sweepers' carts nor bullocks are available. Since the old latrines were condemned and removed, two formerly frequented masonry ones (which are *far* too close to the wells) have been again used. I protested against this, and another large one at a proper distance has been sanctioned. When this is done, I recommend that the present ones (close to wells) be bricked up. In the meanwhile a matted enclosure is used by the soldiers.

4. Good, but old latrines (masonry lately resumed for use), too close to the wells—50 paces—condemned at my instigation; others being built.

5. Excellent but clothing too tight, and undress too cold in winter; a flannel or cotton quilted jacket, or sleeved-waistcoat, or a "banian" needed. Food and clothing. The men do what they can to supply this deficiency, without success.

6. Duties not too severe, horse riding, single stick, &c. Duties, exercise, and amuse-ments, their effects on health. &c. keep the men apparently in health.

7. A large new hospital, old Artillery barrack repaired. It is of the following dimensions:—length of large ward 144 feet, breadth 22, height 16; length of small ward of both sides 144 feet, breadth 10, height 12. It is an excellent building, but a contagious ward is needed (verandah used at present). As trees were promised I did not plant any, as I did in the lines, at my own expense; which I regret, as none have been given and the planting season is past. The staff and details sick are also accommodated here, but another barrack is being prepared.

8. The general health, though good, has not been quite so good, perhaps, as last year. General health and physique. The *physique* of the men is not the same as it was when they were recruited in Hindoostan. We do not get in the Deccan the same class of Mahrattas who formerly made up its armies. The inducements seem to be less, marauding being impossible, &c. Nevertheless we are improving. We get some lads now who measure over 34 inches round the chest; almost all are over 33. The average height is 5 feet 6 inches. I cannot give the average size round the chest, as the record has been destroyed in the Adjutant's office. No recruiting is allowed out of the Bombay Presidency, not even here in Rajpootana (Neemuch). This seems a pity, for although the quality of the Mahratta recruit will improve, the very languages of Deesa and Neemuch to them are unknown; nor can they compare, I fear, with the men of the north in stamina. In weight they are perhaps better for cavalry. The number of men from the north are about three-fifths, from the south two-fifths, out of a total strength of about 500. Mussulmans bear the same proportion, nearly, to Hindoos, viz. two-fifths. But owing to the increase in the prices of all articles of food, forage, and clothing, &c., the men, in spite of some slight compensation, have certainly not enough to eat, especially if their family is large. They have to stint themselves to give the regulated "feed" to their horses.

* Old masonry ones lately resumed, as all the others had been condemned.

9. The rainfall (viz. about 47 inches), though heavier than last year's, was not much Influence of climate or local above the average (about 35 inches). Nevertheless fever was circumstances on health. prevalent, remarkably so in the other corps stationed here, but not quite so much in the cavalry, who are much further away from the tank. Thus *every man* in the Royal Artillery had fever without exception. Out of 329 cavalry soldiers, 292 only were attacked.

10. There were 449 admissions from fever. They were treated almost exclusively with 20 to 30 grains of quinine every morning. This I purchased, to supplement that allowed by Government. There were very few re-admissions, viz. 81 had the fever twice, 74 three times, and only 40 more than three times, out of 292 individuals attacked; the rest (97) were cured without a return of the disease. In the other regiments, although the cases were hardly more numerous, every man was re-admitted over and over again. The fever, as is usual in Neemuch, was not at all of a lethal type. It was worst during the rains, and was four times more frequent in its attacks than usual. Dysentery and lung diseases show no increase to speak of—12 and 2 cases respectively—a very small percentage. Injuries were less numerous this year. The above remarks and figures do not include a squadron at Nusseerabad. Including the figures of the Squadron at Nusseerabad, the number of admissions amounted to 992; of these 554, or more than 50 per cent., were from ague, 32 from rheumatism, 29 from conjunctivitis, 18 from dysentery and 19 from diarrhœa.

11. One boy was seized with sudden and copious hæmoptysis (bursting of an aneurism?) and died shortly after. No post mortem was allowed by his friends. One man shot himself in the lines at Nusseerabad.

12. Cholera lasted during a whole year, having first appeared November 1877 and ended in the same month of 1878. The type was the severest I have seen. In H. M.'s 68th Regiment only 2 cases recovered out of a total of 16. In the staff only 2 cases out of 5 Europeans got well under my charge. Only a few native followers were attacked, and *comparatively* few even in the bazar and villages. Pettenkoffer's theory was again found inapplicable to this epidemic, it having begun in November last and attained its *acme* this September and November, when the subsoil water was at its *highest*, almost. It is curious that in the neighbourhood of a well (No. 30) which (in spite of my many and repeated recommendations for all wells to be so) had neither been covered nor reflagged around the mouth, cases of cholera occurred. The water in this well was declared "suspicious" by the Government Chemical Analyser. This Regiment, for the second time, absolutely escaped from the epidemic, being further from the foci of contagion, which are at the north end of camp among the Europeans, or in the arsenal where old cholera tents have been stored, or in the barrack stores where old cholera-camp bedding, &c. &c. has been kept. I will therefore not extend these remarks to a greater length, but refer to my cholera reports for 1875, 1877, and 1878, together with my short history of cholera in Neemuch, since 1861. It will be then seen that cholera appears, on an average, every fourth year inclusive. The extreme prevalence of fever may be looked upon as an epidemic. Whether its outbreak be due to importation or to telluric, vegetable, animal or meteorological poison or influences, was not satisfactorily made out. The resuscitation of old germs seems to be probable.

13. Since 1873 the whole regiment had been re-vaccinated. All recruits were vaccinated Vaccination and re-vaccination. or re-vaccinated, unless the lads had marked signs of small-pox, or could prove recent vaccination. Some operations, as usual amongst re-vaccinations, utterly failed. There are no failures among children, for they are operated on again and again till protected (secondary vaccination). Number of children vaccinated 63; number of recruits and men re-vaccinated 2.

14. Of the thirty-six who were invalided, two brothers showed tubercular leprosy, one old man had chronic tumour of testicle, and one chronic Invaliding and its causes. bronchitis; the rest were old and worn out.

15. 1. Immediate building of the new latrines (sanctioned) near the haystack. 2. The Requirements and recommendations. abolition of the old masonry latrines, which are too close to the wells. 3. The abolition also of private latrines, and the non-toleration of any cesspools in the courtyards or elsewhere, as I have constantly recommended (almost entirely carried out). Doing away with courtyards in the syces' lines, and if public bathing places and proper female latrines could be substituted, the doing away of these courtyards also even in the married soldiers' quarters, or at least the enlarging of them (the courtyards). New lines of huts larger and further apart, &c.

16. The cinchona alkaloids were given to the grooms and followers generally, and in Special observations, new the form of pills seemed to cause less vomiting than in solution, experiences in treatment, sanita- and to be of some use in preventing returns of the fever; some- tion, &c. times they caused much nausea and vomiting and had to be laid aside, but the fever was cured in about one-half of these cases (followers). Nitrate of amyl inhalation succeeded in relieving symptoms in some cases, but utterly failed in my own person. With regard to the etiology of the fever various surmises can be made—1st, the rainfall (not very excessive); 2nd, the general malarial influence which was marked throughout the whole of India this year; 3rd, the absence of trees near the European barracks. The 10th Regiment however and Cavalry have many trees in their lines on the flank or in front or near &c., nevertheless almost every individual was attacked in both these Regiments. 4th, the presence of the tank near the European barracks.

Inspection by Deputy Surgeon General WYLLIE.

My inspection (December 9th, 1878) was entirely satisfactory, all the more so that it was made without any previous knowledge of my coming, and I was thus enabled to realize that the sick are carefully attended to, and the duties faithfully and efficiently discharged. The temporary hospital, in occupancy at the date of last inspection, has been vacated for a Barrack, which affords ample and much better accommodation, with sufficient subsidiary buildings. Lines clean, and improved in repair and drainage since last visit. Here, as at Nusseerabad, the incidence of ague has been much less in the Cavalry than in the Infantry. But in the case of the 10th Regiment it is to be remembered that the Corps suffered much from that ailment during a three years' residence at Mehidpur, and since removal to Neemuch, at the end of 1876, there has been a constant excess in ague as the outcome of malarious poisoning contracted at the former station.

H. M.'s No. 1 Mountain Battery.

RAJKOT.—In Medical charge of Surgeon R. H. BATTY.

Average Strength	126	Deaths in Hospital	2
Do. Present	120	Do. out of do.	1
Admissions	287	Invalided	36
Daily Sick.....	8·9	Sick Leave	12

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875.....	Rajkot	84·6	2·1	0·8
1876.....	Do.	70·0	2·5	0·8
1877.....	Do.	61·5	2·4	0·8
	Average...	72·0	2·3	0·8
1878.....	Rajkot	239·1	7·4	1·7

1. The Battery has been stationed at Rajkot during the year. A detachment composed of 46 men proceeded to Balacherie on the 11th November 1878 for target practice, and returned to this station on the 6th of the following month.
- Location and movements.

2. The lines are built on the standard plan, they are clean, properly ventilated, roomy, and in excellent repair. The drainage is all surface, the bathing present condition, hygienic and otherwise. Lines and their surroundings, and refuse water from the huts passes through narrow channels, covered over with tiles, to the roots of trees which are planted and are flourishing close to each house. The ground around the lines is kept very clean and in good order. They are the most comfortable lines I have seen.

3. The native officers have latrines in their own huts, and in them the dry earth system is adopted; these private latrines are occasionally inspected and have always been found clean and in good order. Two Conservancy. stone built latrines, about 140 yards from the lines, are used—one by the men, the other by the women and children of the Battery. The last named latrines are cleaned out twice daily and the night-soil is removed in large covered iron pans and conveyed away in the conservancy cart to a distance of more than one mile, well out of camp limits and any habitation, where it is buried in pits. The conservancy both of the lines and latrines is well looked after, and there are now no complaints.

4. This is from wells. On account of the heavy fall of rain last season the supply is abundant and excellent, and there is every probability of its continuing so until next rains. Water supply.

5. Mutton and the various grains are, just now, at famine price. Vegetables that promised to be abundant, are not now procurable, the entire Food and clothing. crop having been eaten up by a large flock of locusts that has been hovering about here for some time past. The uniform worn by the men is made of dark slate coloured khakee, the tunic is light, loose, comfortable, and is well suited for the men.

6. Gun-drill, morning parades, and stables are the principal duties. They are by no means excessive, but tend to promote a healthy influence on the physique of the men. There is a gymnasium in close proximity to the lines, in which the men daily go through various exercises. Duties, exercise, and amusements; their effects on health.

7. The sick, as a general rule, have suitable and sufficient space in the hospital common to the squadron of Cavalry and head-quarter Wing H. M.'s 7th Regiment N. I., but this year, during the months of October, November and December, on account of the extraordinary large number of fever cases that had to be attended to, a number of tents had to be pitched, close to the permanent building, in which a large proportion of the cases were treated, and thus prevented overcrowding. The hospital building is a very fair one, well ventilated and kept in good repair. The quarters for the Hospital Assistants are in a very dilapidated state, and require a good deal of repair. The mud walls surrounding this building tumbled down last rains, and the place is not only uninhabitable, but is an eyesore to the station. The latrine common to this hospital still remains in its objectionable and dangerous site, in close proximity to the finest well in the station. I reported this latrine over five years ago and repeated doing so in every report I have since written; my representations have been so far successful that the latrine has been condemned and ordered to be removed, but the workmen have not yet commenced.

8. The general health of the corps was excellent up to the latter end of the rains; in September intermittent fever became prevalent, and since then the Battery has suffered much. The fever has left the men weak and anæmic-looking, but I trust, now that the disease is on the decline, the men will soon regain their former fine, robust and muscular appearance. They are a very fine body of picked men, but, as I have said before, malarious fever has told much against their present appearance. In September ague commenced to be prevalent and continued to increase during the following three months, giving a number of admissions as follows:—September 16, October 66, November 64, December 34; total 180. Thirty-eight admissions from other causes makes the total 218 for the last four months of the year. Intermittent fever (in the majority of the cases of the quotidian variety) provided no less than 195 of the 290 cases treated. Simple fever gave 18; these were, as usual, the prevailing diseases. Slight contusions from kicks by mules and shoe bites, supplied 20 cases. Dysentery 7, diarrhoea 7, acute rheumatism 3, chronic rheumatism 3, conjunctivitis 3. The corps shows a lower standard of health than it has done for many years. The total number of admissions from all causes during the past year was 287, while for 1877 only 72 with a similar strength 117. The Battery is, with few exceptions, fit for active service.

9. An extraordinary heavy rainfall, the largest on record here, has, there is little doubt, been the great cause of the increased sickness in the corps. The civil population of the province also suffered most severely from a similar cause.

10. The admissions from all causes during the entire year under review amounted to 287, and if to this number be added 3 cases which remained on the 1st January 1878, the total treated will be 290, which compares most unfavourably with the previous year, in which the number treated was only 75. For the first eight months of the year the standard of health was very good, the register for that period showing only 69 admissions from all causes.

11. Two deaths took place in hospital—one from cholera, the other from acute bronchitis. One death took place out of hospital from general debility, due to secondary syphilis and syphilitic cachexia; the man was proceeding to Ahmedabad to appear before the General Invaliding Committee, and died on the way.

12. Three cases of cholera occurred, one in May and two in July.

13. Nine primary vaccinations, all successful, took place. There were 41 re-vaccinations, of which only 11 were successful. The lymph was on all occasions carefully examined and found good.

14. Five men were invalided on "Pension," the causes being, 2 old age and general debility, 1 night blindness, 1 scrotal hernia, 1 loss of power in the left arm from an old fracture. Two were discharged on a small gratuity on account of permanent unfitness, from weakness and gonorrhæal rheumatism.

15. The quarters of the Hospital Assistant require to be thoroughly repaired.

16. I have persistently administered, for the past two months, in most cases of intermittent fever, the cinchona mixed alkaloid, and it has not proved, in my hands, the valuable antiperiodic it has been reported to be. In all cases it produced intense nausea, and in not a few gastro enteric irritation with diarrhœa in some, and dysentery in others. I have given it regularly for over twenty days, in five grain doses three times daily, to patients without any apparent benefit, when I substituted quinine for it, with the most marked favourable results. I am happy to state that 1st Class Hospital Assistant Shaik Luteef has performed his duties to my entire satisfaction; he is an able and most deserving servant.

Inspection by Deputy Surgeon General WYLLIE.

Inspected February 22nd, 1879. Hospital, shared by the sick of Cavalry and Infantry wing, is suitable and ordinarily ample, but in the exceptional prevalence of ague from October to December, tents were necessary to supplement the accommodation. Lines on standard plan, clean and roomy, with appropriate arrangements for ventilation and the disposal of sullage. Masonry latrines common to Artillery and Cavalry are in permanent use owing to rocky ground. Nothing has yet been done towards removing the hospital privy from its very objectionable proximity to the well, as formerly detailed, beyond selecting a site for a new latrine.

H. M.'s 1st Regiment N. I. (Grenadiers).

AHMEDABAD.—In Medical charge of Surgeon Major C. F. OGILVIE, M.D.

Average Strength	676	Deaths in Hospital	15
Do. Present	668	Do. out of do.	4
Admissions	1,158	Invalided	38
Daily Sick	25.1	Sick Leave	13

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Poona	123·7	3·9	0·4
1876	Ahmedabad	124·1	4·2	1·5
1877	Do.	94·3	3·3	0·8
	Average.....	114·0	3·8	0·9
1878	Ahmedabad	171·3	3·7	2·2

NOTE.—No annual report has been received from this regiment. The present Surgeon in charge, (A. Danc,) writes that he joined the Regiment after the close of the year, that his predecessor, Surgeon Major Ogilvie, left no data to go upon, and that he himself had no personal knowledge of the movements of the Regiment on which to frame a report.

Inspection by Deputy Surgeon General WYLLIE.

November 7th, 1878. Inspected thus early the Regiment being under orders to march and I about to leave on tour. Health less satisfactory than in previous year, and mortality relatively high, 8 out of 12 deaths to date having happened by cholera, which lingered in the station from May to July. Equipment and details of management satisfactory. At present however with 79 sick the establishment is scarcely sufficient. Hospital in poor repair, the brick floor much worn, and the ceiling in tatters: accommodation ordinarily adequate and fairly suitable; but at present overcrowded, and there are 3 tents in occupancy. There is no contagious ward, and no privy for establishment and families. These wants should be supplied and, as both native hospitals are close together, the same provision would serve for both.

The only unusual event was the appearance of enteric fever in April, and 2 deaths unfortunately resulted before it was fully diagnosed. The runlets, here covered, leading from family quarters were suspected, opened out, and the disease at once disappeared. Elsewhere all such drains have been kept open under my advice, as they should invariably be, to obviate the risks arising at night from the heated rarified air of the hut drawing sullage vapour within.

I refer to this matter because in the changes of medical officer the present incumbent cannot speak to the circumstances, and it should be added that as soon as the disease was diagnosed, turpentine treatment was adopted and with uniform success.

H. M.'s 6th Regiment N. I.

Mhow.—In Medical charge of Surgeon D. N. PARAKH.

Average Strength	684	Deaths in Hospital	16
Do. Present	641	Do. out of do.	6
Admissions	795	Invalided	46
Daily Sick	17·2	Sick Leave	15

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875.....	Belgaum	58·3	1·8	0·6
1876.....	Aden	62·6	2·1	0·6
1877.....	Do.	53·7	2·3	1·1
	Average...	54·9	2·1	0·8
1878.....	Mhow.....	124·0	2·7	2·6

1. The head-quarters of H. M.'s 6th Regiment N. I. arrived in Mhow from Aden on the 27th December 1877; the second detachment on the 21st January 1878; the third on the 17th February 1878; and the fourth on the 7th April 1878. The Right Half Battalion marched to Indore on the 13th May 1878, and has been located there since.

2. There have been no changes during the year. The same defects are to be observed in them as before. They are built on a plain, the soil being black "cotton," and retentive of moisture. The streets run with north and south, and are therefore not ventilated properly by the prevailing wind. The huts are low, single tiled, and without plinths, and built of mud and sunburnt bricks, hence they are very damp during and after the rains, which circumstance predisposes the inmates to attacks of malarious fevers and chest affections. There are no windows at the back; there is no roof ventilation except through the erevices between tiles, and the doorway is not high enough; hence ventilation is defective. The cubic space is deficient. Most of the married men and some of the bachelors were induced by the Officer Commanding and by myself to lay out little gardens in front of the huts, in order to utilize the waste water. The rain water was carried off from near the huts down a slope on the streets, a gutter in the middle, and by which it was carried into the nullahs.

3. The trench latrine system was in use from the beginning of the year up to the setting in of the rains. The ground is limited in extent and therefore likely soon to be injurious if not allowed rest. Urinals ought to be built near the huts. This suggestion was made to me by Deputy Surgeon General Wyllie, and I entirely agree with him as to their utility. The permanent latrines have been in use since the rains. They were kept perfectly clean and dry earth was used for disinfection. The night soil was carted away to a distance of about three miles and buried in trenches. The only drawback to these latrines is that they are too far from the lines. The native officers have separate latrines in rear of their huts, which were also kept clean.

4. This was derived from three wells. The supply threatened to fall short of the demand during the hot weather, but the copious fall of rain we had removed all anxiety on that score. One of the three wells, which is used by "Moehees," is very near the latrines of the 13th Regiment N. I.; another, which is used by "Purwarees," is near the hospital latrine.

5. Provisions were scarce and dear and vegetables particularly so. The men, coming from Aden, where they were in the habit of getting Government rations in addition to their pay, felt this very much, even though compensation was allowed. Their children and dependents consumed the greater part of their pay. The recent order of Government not to allow more than a certain number of dependents in the lines, and to prohibit the pensioners from living in the lines, was a very wise one, and will no doubt benefit the sepoy considerably.

6. Duties consisted of parades, musketry instruction, drills, guards, &c., and in the months of April and May, tile-turning and hut repairing. There were no amusements of any kind, as the men had no time or inclination for them.

7. There were no changes made in this. Accommodation, ventilation and sanitary condition were excellent. The wards were very cold during the rains and the cold weather owing to excessive ventilation. White-washing, and here and there sundry plastering to the walls and floor, were the only repairs done. The surroundings of the hospital were in a good sanitary condition. The hospital latrine was kept clean and disinfected by McDougal's powder and carbolic acid. The water supply for the hospital was good and abundant, and was derived from the best regimental well. The Hospital Assistant's quarters are not properly ventilated; otherwise they were in excellent condition.

8 and 9. The physique of the men could hardly be said to be good. Most of the men, though not positively ill, seemed to me to be anæmic, scorbutic and possessed of low vitality. Surgeon Major Rogers often remarked their feeble power of resisting the inroads of disease. I believe all this to be due to the combined result of the enervating effects of the climate of Aden, where they lately were stationed, and of the dearth of provisions here. Moreover, I respectfully submit it as my opinion, that for a regiment coming from Aden, the climate of Mhow, characterized as it is by dryness of air and excessive changes of temperature, is hardly well suited. Out of 32 men under fifteen years' service who volunteered for active service, 17 were rejected, principally because they had scorbutic taint, feeble hearts, and general debility, and presumed inability to stand the trying climate of the north; and only 15 were thought fit by a Special Medical Board assembled for the purpose of examining them. Most of the deaths that

occurred were not so much due to the severity of the disease as to the feeble power of resistance. Latterly, however, the Regiment has been fast improving in health, and I trust will soon reach the normal standard.

10. The diseases that furnished the greater number of admissions are—ague 484, contusions 37, boils 17, diarrhoea 30, conjunctivitis and other eye affections 14, scurvy 24, rheumatism, acute and chronic, 28, dysentery 15, ulcers 7, and colic 29.

Two cases of dementia and one case of mania occurred during the year. In one case of dementia which occurred under the late Dr. Rogers, the cause was, according to that Surgeon, impaired nutrition of the brain from a morbid condition of the blood, which was first indicated by scurvy. The case of mania occurred in a man who indulged moderately in gunjah, who was weak, anæmic, and slightly scorbutic; he remains under treatment.

A very interesting case of aortic obstructive and regurgitant heart disease occurred, which proved suddenly fatal, and baffled all treatment.

Amongst officers a case of congestive apoplexy occurred. The attack came on at night whilst the officer was out on duty on horseback. He fell off the horse and continued insensible, breathing slowly, irregularly, and stertorously, and in a precarious state with cold extremities, and hot head, for 48 hours. There was no paralysis at any time of the illness, no albuminuria, and beyond weakness, no organic or functional disease of the heart. When he became conscious he continued for a long time drowsy, forgetful, and in a half dreamy state, with very confused ideas as to time and the place he was living in, &c. With great difficulty, and prolonged anxious watching and treatment, he was sufficiently brought round to undertake a journey to the Neilgherries for change of air. This he did and has thoroughly recruited his health. Another officer had a prolonged and severe attack of remittent fever, from the effects of which he was so much reduced in strength that he was strongly recommended for sick leave to England.

The total number of admissions during the year from all diseases, excluding the detachments whilst they were at Aden, and excluding the Right Half Battalion at Indore, was 475; the daily sick 9.6; the average strength 534; and the average strength present 443.2, and including the detachments it was 795.

11. There were six deaths in the hospital at Head Quarters at Mhow; one from remittent fever; four from ague; and one from valve disease of the heart and aortic aneurism. In one case of ague death was sudden, and on post mortem examination the heart was found to be small, pale, flabby, and anæmic, and the body emaciated to the last degree. Death occurred from syncope due to the increased strain on the already feeble heart by the rise in temperature, and the depressing influence of the malarial poison. In the second case the man was half starved and weak to begin with, and succumbed easily to the disease. The other two cases of ague in which death occurred were in men just arrived from Aden in a very debilitated condition. In the case of valvular disease of the heart, there was, besides aortic obstructive and regurgitant disease, an aortic aneurism to account for the sudden death that occurred after a sudden attack of vomiting of blood. There was not a single symptom during life indicative of the presence of this aneurism, which attained the size of a small lemon, and which was situated three inches from the commencement of the aorta. The aorta was considerably dilated, and its lining membrane, together with that covering the valves, thickened, and very much roughened. In the sac were four ulcers of varying depths, one of which perforated into the trachea. The remaining 10 deaths occurred in the Right Half Battalion at Indore, their causes being sporadic cholera 8, ague 1, and remittent fever 1.

There were six deaths out of hospital. One from phthisis, one a man who died from the effects of scurvy, one from dysentery, and two from acute and chronic bronchitis (all men on sick leave); and one, a man who was drowned in a nullah whilst bathing.

12. There were no cases of cholera in the head quarter wing. In the Right Half Battalion at Indore, however, there occurred several, which will be reported on by the Medical Officer in charge.

One case of small-pox remained from last year; one new case was admitted on the 6th January 1878. The former was in a girl, the latter in a boy; both were under five years of age. They caught the disease probably somewhere in the Conkan, as they were travelling from Malwa to Bombay and from thence to Mhow, and as one had the attack before she came to Bombay, and the other at Mhow; one was unprotected, and the other imperfectly protected by vaccination. Neither had a previous attack of small-pox. The unprotected case was of the confluent variety and very severe; the protected one was of the discrete

variety and ran a mild course. Both cases recovered. One case of chicken-pox occurred in a private and ran its usual course to recovery.

13. They were carefully and thoroughly done as far as possible. From the 1st January 1878 to 31st December 1878 there were—(a) primary Vaccination and re-vaccination. vaccination—successful 63, unsuccessful 20, total 83 ; (b) re-vaccination—successful 7, unsuccessful 37, total 44.

14. Forty-seven of all ranks were invalided; one man who was sent to the Bombay Lunatic Asylum suffering from dementia, was also subsequently Invaliding and its causes. invalidated by a Special Board. The causes of invaliding were : —(a) old age and debility, 35 ; nine of these having served over 32 years, did not appear before the Invaliding Board, but were pensioned off without medical examination ; (b) chronic rheumatism, 5 cases ; (c) hæmorrhoids, 2 cases ; (d) fever and debility, one case ; (e) defective eyesight due to cataract, one case ; (f) chronic diarrhœa, one case ; (g) chronic bronchitis, one case. Most of these men were scorbutic, had feeble action of the heart, and an inclination to varicosity of veins, besides the marks of agedness. Fifteen men were sent on sick leave.

15. Raising and paving the floors of the huts ; improving the ventilation of the huts and the Hospital Assistant's quarters ; some kind of accommodation for the treatment of bad cases occurring amongst women Requirements and recommendations. and children who have now to be treated at their homes at a great disadvantage ; these are the principal requirements, &c. I think a separate eye-ward, with appliances for darkening the room, and a filter for dispensary use, are required very much also.

16. The treatment of ague by cinchonidine and cinchona alkaloids was duly carried on. In slight and fresh and uncomplicated cases I found them very useful ; but for severe cases quinine was absolutely required. I have used the hypodermic injection of it with marked success in many cases, and I think it the most economical way of administering quinine. The injection failing, a combination of this method with the internal use of arsenic seldom failed in the severest cases. I believe the liquor arsenicalis a most valuable remedy, and supposing quinine were to get more expensive still, it may prove a more valuable substitute for it than cinchona alkaloids. I used the nitrate of amyl both in the form of inhalation and internal administration in ague for cutting short the rigor stage where this threatened to be severe and prolonged, and in every case I was satisfied that it cut it short almost immediately, and in one case the fever never returned again. In those cases in which the paroxysm recurred, I perceived a diminution in its severity. In one case of acute rheumatism complicated with endocarditis, I found the internal administration of large doses of salycilic acid to remove the swelling and relieve the pain in two days, and cure the disease in a much shorter time than I have elsewhere seen other remedies to do. I tried salycilic acid in two cases of ague with very indifferent success.

Remarks by Deputy Surgeon General WYLLIE.

Inspected December 26th, 1878. I was well pleased with the results of inspection, which enabled me fully to realize that the sick have careful attention, and that all the duties devolving on the Medical Officer and establishment are diligently and faithfully discharged. Hospital similar, but with some little difference in ventilation to that adjoining, (now in occupancy of 13th Wing,) has very good and sufficient accommodation, and I found every detail of its management fully satisfactory. Lines close to hospital objectionable in construction, particularly in extreme narrowness of streets, as well as in their running parallel to the strike of the ground ridge, instead of to its slope, whereby dampness results. Huts defective in cubage, and without plinths, but in fair repair, and I note with satisfaction that notwithstanding the natural difficulties of ground, much improvement has been made since last visit in the drainage of family quarters, the sullage from which is now led to flower beds, some 12 feet in front, the rocky character of the site standing in the way of trees.

H. M.'s 7th Regiment N. I.

RAJKOT.—In medical charge of Surgeon P. J. DAMNIA.

Average Strength	702	Deaths in Hospital	10
Do. Present	647	Do. out of do.	4
Admissions	1,251	Invalided	44
Daily Sick	31.6	Sick Leave	7

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Rajkot and Dwarka	105.9	2.8	1.4
1876	Do. do.	129.5	3.8	0.6
1877	Do. do.	71.8	2.5	1.2
	Average.....	102.4	3.0	1.1
1878	Rajkot	193.3	4.9	1.5

1. The Head-quarter Wing H. M.'s 7th Regiment N. I. has been at Rajkot for the past six years. A detachment consisting of 106 men left Rajkot for Bhuj to relieve H. M.'s 11th Regiment N. I. on the 10th October 1878.

2. No change has been made in the lines since the last report. The huts are smaller than those laid down in the standard plan, and in number sufficient to accommodate only two companies. The wing, not counting the men on furlough, recruiting duty, or in hospital, may be said to consist of three and a half companies. One complete company is located in the 28th Regimental lines, while the remaining two and a half companies occupy their own lines, thus exceeding the complement for which they were built by half a company or forty men. The excess occupy bachelor's quarters, each hut containing two instead of one. The huts are in good repair, and the ground around them is kept clean and in excellent order.

3. There are two latrines, 563 yards to the left front of the lines, one for males and the other for females. Each seat is furnished with an oblong iron pan, which is emptied thrice a day, after having been well covered over with dry earth, into iron receptacles. The rubbish collected from the lines, and the latrine accumulations, are buried in pits to the north of, and at some distance from camp. There are bathing places in the verandahs of the huts. The bathing water is carried away from the vicinity of the huts by "cutcha-built" surface drains.

4. Drinking water is obtained chiefly from the well situated about three hundred yards to the north of the 7th lines. The supply is ample and likely to last the entire year. The high and well built surrounding walls, in the absence of drains from the immediate vicinity of the well, account for the excellent quality of the water.

5. Food fairly good but expensive. Clothing, Regimental uniform, red cloth in cold weather, white clothing in hot weather.

6. The duties consist chiefly of parade and guard duty. Under the head of exercise are included morning and evening parades, running drill during the cold season, wrestling and sword exercise. Music and singing are the chief amusements. The duties are by no means injurious to the health of the men.

7. The hospital is a large well ventilated building. The latrine is quite close to the well, which supplies the hospital and several of the officers at camp with drinking water. The condition of the earth in and around the latrine is bad and may prove injurious hereafter.

8. The health of the corps has been for the past four months very bad indeed. There was an increase of 813 in the number treated during the past year as compared with that of the previous one, the average strength of the corps being almost the same during the two years. The physique of the men is below the average.

9. An extraordinary heavy rainfall, the highest on record here, was no doubt the cause of increased sickness.

10. During the year 1877, with an average strength of 599, the total number treated was 454, while during the year under report, with an average strength of 647, the total number treated was 1,267. Ague in

both years was the prevailing disease. The number treated from this cause alone during the year under report exceeded that of the previous one by 942 cases. During July, August, September and October the admissions from ague numbered 29, 36, 90, and 266 respectively. Scurvy only furnished 6 admissions, while syphilis gave 14.

11. Five deaths took place during the year at Rajkot, two from cholera, two from diarrhoea, and one from hydrophobia. The remaining five deaths in hospital took place in the wings at Tanna and Bhuj.

12. Cholera appeared in the cantonments on the 25th March 1878. The first case occurred in the line on the 25th March 1878. 7 cases in all occurred, of which five were amongst the fighting men, two of whom died in the hospital and two out of hospital, the fifth recovered. The first case occurred on the 25th March 1878, and the last on the 22nd August 1878. There were no cases of small-pox during the year.

13. Vaccination is steadily carried on amongst children born in the lines. The results obtained during the past twelve months are as follows:—18 primary vaccine operations took place and they were all successful; 97 persons were re-vaccinated, of which 59 were successful and 38 unsuccessful.

14. Forty-four men were invalided. The causes were old age 31, rheumatism 8, and syphilis 5.

15. Lines clean and in good repair, permanent latrines inconveniently far away.

16. The most noticeable feature in the report is the great increase of the average of sick men, it being 31·6 for the year under report, as against 15·2 of the preceding year. This appears to be due principally to the excessive rainfall, the prevalent disease being ague. Mortality too has increased in proportion: ten fatal cases in hospital this year, against seven of 1877; two of these were from cholera, there being two cases more of cholera out of the hospital.

Inspection by Deputy Surgeon General WYLLIE.

Inspected 14th February. Hospital arrangements all suitable and sufficient; accommodation ordinarily adequate, and very good; unless that the roof ventilation is complained of as excessive in the cold weather. Huts old and very defective in cubage. A site for new lines has recently been selected, better raised than the present one, and near to sweet water; but with the disadvantages of being away from the parade ground, distant from the officers' quarters, and inconveniently far from the bazaar. On the whole however it is certainly the best selection available if the existing site is to be changed. The left wing suffered severely from ague at Rajkot from September till December; but health has now nearly returned to normal standard.

H. M.'s 10th Regiment N. I.

NEEMACH.—In Medical charge of Surgeon Major F. R. O'KEARNY, M.D.

Average Strength	704	Deaths in Hospital	8
Do. Present	659	Do. out of do.	4
Admissions	1,981	Invalided	28
Daily Sick	64·5	Sick Leave.....	45

Year.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Mehidpur and Agar.....	213·9	6·7	4·2
1876	Do. do.	230·9	7·7	0·8
1877	Neemach	189·9	6·1	0·1
	Average...	211·2	6·8	0·4
1878	Neemach	300·6	9·7	1·2

1. The head-quarters were stationed at Neemach throughout the year, several escort parties having been sent along the Nusseerabad and Mhow roads.
Location and movements.
2. Continue much the same as in former reports: they are kept clean and in good order, but are originally defective as to general construction, space, light, ventilation, and a total absence of plinths. These lines are however placed on a slight elevation favourable to general drainage, and there have been no water lodgments observed.
The lines and their surroundings, present condition, hygienic and otherwise.
3. Remains as described in former reports.
Conservancy.
- Similar to last report, with exception of the two solitary cells which have been raised four feet. Lock up rooms are low and deficient in sanitary respects as to space, light, and proper ventilation, and found overheated during the hot weather.
The lock up rooms and cells and Quarter Guard.
4. Owing to a very indifferent rainfall in 1877 (18·68 inches), the supply was scarce during the first half but was abundant during the remainder of the year, the rainfall of 1878 having proved favourable and somewhat beyond the average. As previously mentioned, the wells throughout cantonment were deepened, others sunk, and temporary "bunds," with good effect, thrown across the lateral water nullahs skirting camp.
Water supply.
5. Generally throughout the whole year the grain food supplies have been scarce and dear, and in many instances found of inferior quality, especially the rice, wheat, dhal, and ghee. Bajree was found dearer than wheat, and sometimes not even to be had. The scarcity of vegetable food has also been considerable, prices ranging quite beyond the sepoy's means. Potatoes for instance rose to 8 annas a seer and at times were not to be had; onions 3 to 4 annas a seer, and bhajee 4 to 8 annas a seer when procurable. The regimental garden, only lately established as described in former reports, has been found unequal to meet the emergency, owing in a great measure to excess of demands and the highly unfavourable season, though about 125 Rupees' worth of vegetables were sold to sepoys at considerably cheaper rates than those prevailing in the bazaar. The advantage of dieting the sepoy both when well in lines as well as when sick in hospital is again earnestly brought to notice. It is a well-known fact that many sepoys seriously suffer in health and physique by what may be called a slow process of semi-starvation, many denying themselves the common necessities of life for the sake of supplying their relations or friends with monthly instalments from their small pittances of pay which are barely sufficient for their personal wants. This is a most serious evil and can only be checked through daily authoritative inspections (made by men of competent castes) of the diet and rations which sepoy should, like soldiers, daily receive, however "impracticable" the suggestion may at first appear. The clothing is the same as last report, in addition 1 pair of socks per man has as yet been supplied with a warm blanket to nearly all, and a "doputta" to 2 companies; the remainder will be distributed as they come to hand. I need scarcely say that this amount of clothing is inadequate to meet the demands and wants of this climate, and the want of warm flannel inside clothing is a fertile source of much fever and illness and invaliding.
Food and clothing.
6. As in last report. As regards the duties generally these have been (as recommended) considerably curtailed owing to the general sickness and debility prevailing, especially after the monsoons, all which measures have contributed in sanitary respects towards the general health and well being of the Regiment. The average number of nights in bed has been as follows: Native officers $11\frac{1}{4}$, havildars $4\frac{1}{4}$, naiks and lance naiks $5\frac{7}{8}$, buglers $5\frac{1}{8}$, privates $6\frac{1}{8}$, total $6\frac{1}{2}$. This average however includes all men told off for the various duties of the regiment, such as bandsmen, tailors, shoemakers, book-binders, carpenters, armourers, schoolmasters, &c.
Duties, exercises and amusement; their effects on health.
7. As last report. Owing to excess of sick, and in order to avoid as far as practicable overcrowding, the two hospital blocks as last year described were supplemented with a similar building adjoining (used as a school, tailoring, and band room) which was vacated and given over for the use of the hospital, in addition to which were two pall tents, the whole affording shelter for 250 sick; these latter "palls" however being found cold and uncomfortable, were soon returned as circumstances admitted. Owing to excess of sick (occasionally over 250), and the demand for cots exceeding the barrack supply, men were accommodated each with a thick dry grass bedding laid on the flagged floors, which during the cold weather and with a scanty supply of clothing and bedding were found most serviceable and agreeable to the comforts and expectations of the men, the
Hospital and its immediate surroundings, present condition, hygienic and otherwise.

generality ultimately preferring this arrangement to the cots themselves, which latter, without adequate bedding, appear uncomfortable to sepoys in the trying cold weather here. The infectious disease ward referred to in former reports has not yet been formed, but plans and estimates have gone in to Government. When required, one ward of the adjoining hospital block was used for this purpose, and in case of small-pox "unservicable" tents and grass huts were used. A vacant building for a "dead house" has been altered by the addition of a few glazed windows, &c. and taken over during the year, and a hospital guard room on standard plan was built, and has been in use since April last, thus doing away with the former inconvenience of quartering the guard in the hospital verandah, an arrangement which in both sanitary and other respects was objectionable.

8. The general health of the Regiment has considerably suffered during the past trying malarious season, which, in addition to malarial disposition General health and physique. previously engendered both at this station and at Mehidpur, have contributed largely to flood the hospital especially during and after the recent monsoons with a severe and most unusual sick list of malarious fevers (*vide* the table of sickness below). It is doubtful whether the Regiment will readily be in a fit state for active service for some time to come without a change to a more suitable climate, for it may be here added that out of about 70 men "volunteering" during the year for active service, about 51 per cent. were declared unfit by the Medical Board. Average height 5 feet 7½ inches, average round the chest 34½ inches. The general physique is good, but there has been little room for improvement owing to the general indisposition and illness of the Regiment.

9. Owing to the general unhealthiness of the past year, the climate cannot be said to have exerted other than a most injurious effect on the general Influence of climate or local health, especially after the monsoon, when malarious fevers circumstances on health. after the heavy rainfall were endemic and of a more or less severe and persistent form, attended with frequent recurrences (average about from three to four times in the same individual) leading on to various complications, gastric, hepatic, or splenic, and considerable general debility and anæmia, for which chiefly upwards of 30 men, in addition to 15 in first part of year, had during that unfavourable season to be sent away for change of air. This latter alternative has no doubt contributed much towards the decrease of mortality and the speedy reduction, in some notable degree, of our sick list and daily average number of sick which otherwise, it is feared, would have been much greater, had these constant sickly inmates of the hospital been detained there any longer. It may be added that though the number of invalids recommended for change was by no means on a par strictly with actual medical requirements, but at the suggestion of the Officer Commanding many other weakly and predisposed men were detained in the hope that time alone with approaching cold weather might work a favourable change, the men being wanted, if possible, for the many imperative duties of the Station, Regiment, &c. Many of these men will however have eventually to proceed on medical certificate as early as practicable, prior to any favourable result in health being apparent.

Details of treated.

10. Details of treated in Neemuch:—

	1876.	1877.	1878.
Average strength actually present, exclusive of men on escort and on command.....	378	604	648
Average daily sick	33·2	37·5	64·5
Admissions	1074	1155	1981
Total treated	1096	1185	1999
Proportion of sick to strength per cent	8·78	6·21	9·95
Admissions to strength per cent	284·13	191·23	305·71
Percentage of treated to strength	289·95	196·19	308·48
Deaths in hospital	3	1	8
Percentage of deaths to treated	0·27	0·08	0·40
Percentage of deaths to strength.....	0·79	0·17	1·23
Invaliding	21	22	28
Percentage of invaliding to strength	5·55	3·64	4·32
Recommended change of air.....	8	33	45
Percentage of men got change of air to strength	2·12	5·46	6·94

The foregoing table will afford an abstract of the comparative sickness, invaliding, and mortality, &c. during the two years while the Regiment was at Neemuch, and one year with a wing of the Regiment while at Mehidpur. It will be seen that during the year under report the total number of treated was 1,999, of whom 18 remained from the former year. Of admissions there were 1,981, the deaths in hospital were 8, and 1,969 were discharged to

duty, excepting 50 men returned in column "otherwise," 72 remaining under treatment at the end of the year; of those men discharged in column "otherwise," 45 were sent for change of air to their respective countries, 4 short service men were discharged the service as physically unfit (*vide* para. 14), and one man for "dementia" was sent to the Lunatic Asylum, Colaba. Of the total treated, the largest figure by far as usual appears under the heading general diseases, especially malarious fevers, of which 1,717 were treated; of these 1,445 were quotidian, 102 tertian, and 170 remittent; percentage of fevers treated to average strength being 264·96, percentage of fevers treated to total diseases treated 85·89. These fevers were characterised generally throughout by strong febrile paroxysms accompanied in almost every case more or less with gastro intestinal complications, usually bilious vomiting or purging, one or both with frequent severe cephalalgia and occasional complications of spleen, liver, or lungs, followed by anorexia for a few days, together with general debility and not unfrequently a tendency to a recurrence of the fever followed by scorbutus, &c. The treatment with the cinchona alkaloids was used nearly in all cases, and in the milder forms with some degree of success, but in the more severe and protracted fevers (especially the bad quotidian and remittent) quinine either by mouth in large doses or hypodermically (170 cases were injected) had to be administered in order to check the return of the paroxysms. As useful adjuvants for other remedies and antiperiodics, or even if given alone in mild cases, these drugs are certainly useful, but I do not for a moment think that they can ever be made to take the place wholly of quinine, as far as this station and its fevers during the past year were concerned. Of the remaining 45 cases under the head of general diseases, 2 of chicken-pox and 3 of measles occurred; all were isolated in a separate ward, were mild and tractable, but the measles were complicated with strong bronchitic affections, yielding however to treatment. Two cases of malignant cholera in June, both recovered under ordinary treatment; 1 erysipelas simple was treated and discharged, 19 cases of rheumatism, of which 4 were acute and 15 chronic, with 8 of lumbago, are recorded. Most of them were more or less of a mild form, but the acute were treated with full doses of salicylic acid and bicarbonate of soda, with good and immediate effect. 10 of syphilis, viz. 6 primary and 4 secondary, were treated (contracted originally on escort duty or from milk and cooly women or others, who enter cantonments for the ostensible purposes of trade and work, &c.) All were discharged well to duty, excepting 3 and 1 remaining, viz. as follows, 2 of short service had to be invalided and discharged, 1 man discharged otherwise was sent on sick leave, and 1 man recently admitted for secondary eruptions in December last, is still remaining under treatment. Nervous system, shaking palsy 1, the same case as mentioned last year, sent on medical certificate, who having now only a few more months to get through for pension, has been kept on in the hope that he may live to obtain it; but as his case was complicated during the past malarious season with a severe attack of remittent fever, there are but little hopes, it is feared, of his living to enjoy this favour very long, and as he is perfectly useless in the Regiment, will be shortly sent away for further change to the seacoast, from which without rejoining the Regiment he can, if necessary, be invalided in Bombay or elsewhere. Neuralgia 2, and pleurodynia 1, mild, were treated; dementia 1. This was the case mentioned in last year's report, who was sent to the Lunatic Asylum, Colaba, in January last. Conjunctivitis, 24 cases treated (1 remaining); all were chiefly of the ordinary mild catarrhal form. One case however admitted on the 27th October was rather unmanageable, having been complicated with considerable debility and anæmia from previous attacks of malarious fever. The case has since slowly done well and was discharged on the 15th December last to duty, having been 1 month and 20 days in hospital. Hordeolum 2, with 2 mild cases of inflammation of ear (external meatus), treated. Respiratory system, 17 cases treated, 1 coryza, 2 bronchial catarrh, 11 chronic bronchitis, 2 pneumonia, and 1 pleurisy. The above were of the ordinary kind, and generally amenable to treatment; 2 of chronic bronchitis, however, were sent for change of air, one of whom it appears from over exposure while travelling died shortly after reaching home; the other was returned well to duty. Digestive system 49 cases treated; of these chiefly dysentery 13, diarrhoea 18, and malæna 1, require notice. Of the 13 cases of dysentery one only had to be sent on medical certificate, suffering from general debility, 11 were duly discharged to duty, and 1 is still remaining owing to complications of remittent fever. Of the 18 cases of diarrhoea, 1 died from this disease, complicated with malarious dysentery, and the remainder 17 were soon returned to duty. One case of malæna in a strong Punjabee was admitted and died within 10 hours after coming to hospital, from excessive uncontrollable hæmorrhage from the bowels. Urinary and generative system,—3 cases of gonorrhoea and 2 of orchitis were treated; those of orchitis required leeches and antiphlogistic regimen, and were soon discharged to duty. Locomotive organs—2 of synovitis, viz. 1 acute and 1 chronic. The former was severe and had to be treated with leeches, blisters, iodine, &c.; both were soon returned well to duty. Cellular tissue—5 of guinea-worm and 1 of abscess. Two of the former were rather protracted, leading to burrowing sinuses along the legs, which had to be opened up to ensure treatment. All the others were mild and more tractable. Cutaneous system—40 cases, all of a more or less

mild form, with the exception of one case of psoriasis, affecting chiefly the extremities, which had to be sent to the seacoast for change of air, and quite recovered. General debility, 3 cases, of which 1 unfit was twice admitted, and the third case, complicated with enteric fever, died from exhaustion during excessive diarrhoea. Injuries,—79 are recorded, the majority, 54 contusions, chiefly shoe-bite caused by the opprobrium of native boots without socks, as already referred to in former reports. Besides there were 4 burns and scalds, 1 slight contusion of scalp from a fall, 5 slight contusions of upper extremity, 1 sprain of wrist, 3 wounds or slight cuts of upper extremity, 6 sprains of ankle, and 2 vulnus, all returned to duty, 1 sprain remaining. There was one severe contusion of the ball of the thumb and 1 contusion of scalp remaining at the end of the year; besides there are recorded one simple fracture of the clavicle, one dislocation of elbow joint discharged to duty, and one fracture of the forearm discharged “otherwise” implicating and causing much rigidity of the elbow joint from which, owing to ill health and general debility, he was sent for change of air to his country, but it is feared the rigidity of the joint may be permanent and lead finally to invaliding. He is stated to have met with this accident from a fall off a camel when returning from furlough. Of the European officers reported sick, the following were the admissions:—Tonsillitis 1, mild case, multiple injury with concussion of the brain and spinal cord and fracture of two ribs. This officer it appears met with an accidental fall from a tree in the jungle while on leave shooting in the hot weather, resulting in the above accident. I had to go about 60 miles into the jungle to see and bring him in a dooley safely back. He was admitted on the 5th June and discharged at his own request on the 4th July, there being still some slight deplopia left, which it was hoped would shortly disappear. He however was re-admitted on the 8th of August with acute dysentery, from which he recovered, but it produced considerable general debility, for which he had finally to be sent home for change of air, his constitution having been much impaired by the complaint and a rather protracted residence in this country. Another admitted was a case of diarrhoea complicated with dysentery, which in due course got well and soon returned to duty.

11. There were 8 deaths in hospital, viz. 1 ague quotidian complicated with remittent fever and general debility, 3 remittent fever, 1 rheumatism chronic, 1 diarrhoea complicated with dysentery, 1 melona, 1 general debility complicated with diarrhoea and enteric fever. There were 4 deaths out of hospital, viz. 2 from quotidian fever, 1 from malignant cholera, and 1 from bronchitis chronic. 3 of these were sent on sick leave, and 1 man, who died of cholera, was proceeding on furlough. Of the 8 who died in hospital, all were Hindoos. Of the 4 who died out of hospital, 3 were Hindoos and 1 a Mussulman. It is remarked that the mortality chiefly occurred among Hindoos, and among those from the Concan and Deccan, the only exception being the case of a Punjabee, who died of melona, and 1 Hindoostanee from diarrhoea and dysentery.

12. There were none in the Regiment. Of cholera there were only two cases among the sepoys, both recovered, and one among the followers which proved fatal; while in the European Detachment 68th Light Infantry, about sixteen cases of cholera occurred, all, I understand, proving fatal, both in barracks and camp. Among the women and children three cases of small-pox occurred; one child died. In the cantonment eight cases of small-pox occurred, of which six recovered and two died. Among the Natives in cantonment, seven cases of cholera were recorded in Staff and Details Hospitals, of whom it is reported five died and two recovered. The mortality in the above European Detachment appears to have been very severe and fatal.

13. There were 61 primary and 40 re-vaccinations. Of the former 7 and of the latter 24 were unsuccessful, in a great measure owing to failure of the lymph after the monsoons. Those “unprotected” children remaining are yet too young or delicate with safety to undergo the operation. The lymph as above having failed, had finally to be obtained from the division, which latter proved also to some extent unsuccessful. The local lymph however afterwards supplied met all requirements.

14. Twenty-eight men were invalided; of these 20 were Hindoos, 7 Mussalmans and 1 Christian; of these four were short service men, viz. 1 Hindoo for epilepsy, 1 Christian for gastrodynia and chronic gastric disease, 2 Mussalmans for secondary syphilis. For ague and general debility 17, general debility 6, general debility and varicose veins 1.

15. A contagious disease ward is still required. The present lines should be abolished, and new ones, on standard plan, with adequate space, plinths, and drainage, &c. built.

16. The same as given in former reports. It is strongly recommended that at this station where malarious fevers assume, especially during and after the rains, at times a somewhat protracted and dangerous type, that the supply of quinine should be larger and more liberal, so as to co-operate with, if not entirely supersede, (in from about one-half to three-fourths of the cases treated,) the administration of the cinchona alkaloids, as, though the latter in some mild cases are useful, they cannot practically, in my opinion, with safety be expected to act as efficiently and take the place of quinine to so large an extent at least at this station as that of "three fourths," laid down in circulars for guidance. I can safely say that almost every protracted or severe case of malarious fever which came under observation had sooner or later to be treated with quinine in full doses, *i.e.* 20 to 30 grains or more daily, as required. 170 were also injected hypodermically with the neutral sulphate 5 to 7½ grs. dissolved in citric acid, water, heated glycerine, and carefully filtered; these solutions were generally effectual and well borne. Not a single case of sloughing or other inconvenience occurred. The first, second or third days were marked with slight pyrexia, resolving itself into speedy convalescence, when within from ten to twelve days the average injected were discharged from hospital, but though the fevers in many cases were checked, general debility and anæmia succeeded in some, who had finally to be sent away for change of air.

Inspection by Deputy Surgeon General WYLLIE.

At inspection (December 10th, 1878) there was the large number of 191 sick (182 cases of ague) distributed in four contiguous barracks, one of which is used as the ordinary hospital. The accommodation is fairly good and ample, with sufficient supplementary buildings, the only drawback at this season being the stone flagged floor. Straw however has been laid down for some 40 patients, for whom no cots are available. I found all orderly and clean, general arrangements good, and the service efficiently and creditably discharged, the large amount of duty devolving on the establishment considered. There has been much complaint in this charge (where the daily sick from ague at one time exceeded 250) of want of quinine. The sanctioned quantity was necessarily inadequate, although supplemented, as at Nusseeraabad, from private sources. Alkaloid remedies proved ineffectual, as many of the cases were unusually severe, the more so that gastric irritability was a common feature; and thus several passed into remittent, three eventuating fatally. I concur with the local military and medical authorities in considering it unfortunate that absolute restrictions should have been put on the supply of an essential drug at a time when excessive sickness demanded its free employment. The men's lines are in as good order as feasible, the radical defects of want of sufficient cubage considered; and I fully realize that the local authorities have done all within their power to lessen the incidence of sickness, and to properly meet its requirements.

H. M.'s 11th Regiment N. I.

BHUJ.—In Medical charge of Surgeon Major C. K. COLSTON.

Average Strength	662	Deaths in Hospital	14
Do. Present.....	630	Do. out of do.	7
Admissions	2,184	Invalided	64
Daily Sick	68·6	Sick Leave	21

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Bhuj	46·8	2·4	0·5
1876	Do.	71·5	2·8	0·2
1877	Do.	108·0	4·3	0·7
	Average.....	75·4	3·2	0·5
1878	Bhuj	346·6	10·9	2·2

Location and movements.

1. The Regiment was stationed in Bhooj during ten months of the year, and left on 3rd November for Poona.

The lines, &c.

2. The lines are situated to the east of the city of Poona and the Sudder Bazaar, being the middle set of three, those of the 4th Rifles N. I. being on the North and of the 18th Regiment N. I. on the South, and the large expanse of the parade ground is to the East. They slope down to a nullah on the West, which is kept as clean as possible, and is occasionally flushed from the Kurruckwasla water works; the huts are in fair condition.

Conservancy.

3. There are two latrines (one for the males, the other for the females) about 200 yards to the west of the line: the filth is removed in the morning by carts to a long distance.

Water supply.

4. The water supply is excellent both in quantity and quality; its composition, according to a recent analysis by the chemical analyser, being, total solids per gallon 5.85, chlorine 0.42, free ammonia .04, albuminoid ammonia .06.

Food and clothing.

5. The grain market is well supplied and is generally fairly cheap, though prices have not fallen yet to what they were before the famine. Vegetables are plentiful and cheap. The clothing does not seem suited to the natives of a tropical climate, in which when on duty they perspire, and coming off, at once throw it off for their own cotton clothing. This sudden change is I think prejudicial to health. The recruits are frequently insufficiently clothed to protect them during the prevalence of the easterly winds of the cool season, and this may to a certain extent account for so many of them proportionately being on the sick list.

Duties, &c.

6. The duties in the last station were very light, and will be very much heavier here, but the men were excused from some of the duties on first arrival, owing to the general low state of health of the Regiment.

Hospital, &c.

7. The hospital is situated about $\frac{1}{4}$ mile from the lines, and consists of two separate buildings, the smaller having two yards, which are found convenient in the treatment of disease; it is on the whole good, except the earth floors, which are difficult to keep neat. Asphalte would be preferable for reasons of cleanliness, comfort and economy. The number of sick since the arrival of the Regiment here has been so great that six ronties have been pitched in the compound, which is spacious and in good order, with water laid on it. There are two latrines with earth floors, which get saturated with urine.

General health and physique.

8. The general state of health of the Regiment is wretchedly low, owing to malarial cachexy acquired in Bhooj; most of the men treated in hospital have enlarged spleens. The physique of many of those enlisted within the last five or six years strikes me as being very poor.

Influence of climate, &c.

9. As above stated, the influence of the climate of Bhooj, where the Regiment was stationed for five years, has had a most prejudicial effect on the health of the Regiment.

Details of treated.

10. The prevailing disease was ague, for which there were 1,686 admissions, chiefly in the months of September, October, November, and December, and in some was of a severe type. Admissions for diseases of the respiratory organs were 79, of the digestive organs 106.

Mortality and its causes.

11. Fourteen deaths occurred in hospital, from the following causes, 1 dysentery, 2 bronchitis, 1 pneumonia, 1 valvular disease of the heart, 1 general dropsy, 1 remittent fever, 5 ague, 2 diarrhoea, and 1 died out of hospital from suicidal gunshot wound.

Epidemics.

12. None.

Vaccination and re-vaccination.

13. 54 children were vaccinated, of which 44 were successful: 115 were re-vaccinations, chiefly recruits.

Invaliding, its causes.

14. There were 64 men invalided—2 scurvy, 2 chronic bronchitis, 2 asthma, 2 deafness, 35 old and worn out, 3 defective sight, 1 hernia, 15 debility, 1 enlargement of spleen, and 1 phthisis.

Inspection by Deputy Surgeon General BEATTY.

The 11th Regiment N. I., which had been quartered at Bhuj since 1873, arrived at Poona on the 10th of November 1878, and occupied the lines vacated by the 26th Regiment N. I. My annual inspection was held on the 18th of the same month. On that date 145 patients were in hospital on account of fever. The sanitary state of the lines is carefully attended to, and the water supply excellent. The general health of the men has been extremely bad. Owing to a lengthened residence in Bhuj during an exceptionally unhealthy season, fever alone, of a pernicious type, was the cause of 1,686 admissions. These occurred chiefly during the months of September, October, November, and December. The general wasting of the body, and sickly appearance of many of the men on arrival, were strongly indicative of their having suffered not only from malarious influences, but voluntary starvation, and though considerable improvement in the general health has taken place since their first arrival at Poona, the low physique of many of them has continued unimproved. The hospital is sufficiently commodious to accommodate 30 patients. The walls and beddings were covered with dust, which owing to the defects of mud-flooring, it is found impossible to avoid. Neither the hospital records, nor diaries of cases had been carefully kept. This neglect has been rectified by the officer at present in medical charge.

H. M.'s 16th Regiment N. I.

NUSSEERABAD.—In Medical charge of Surgeon W. C. KIERNANDER.

Average Strength	728	Deaths in Hospital	12
Do. Present.....	683	Do. 'out of do.	3
Admissions	1,990	Invalided	40
Daily Sick	80.5	Sick Leave	28

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Mhow	137.6	4.2	0.7
1876	Nusseerabad.....	200.4	6.0	0.6
1877	Do.	124.4	3.3	0.4
	Average...	154.1	4.5	0.6
1878	Nusseerabad.....	291.3	11.7	1.8

1. The regiment was stationed at Nusseerabad throughout the year.
2. The lines, built on the standard plan, are clean, and in good repair. The roof is single tiled, and the plinth is low. Bathing water from the married men's quarters passes to trees planted in front of the huts. With the exception of the erection of three urinals, no alterations have been made in the lines since last report. The regimental bazaar is kept clean, in good repair.
3. There are permanent latrines for the women and children, but the men use trenches. The filth from the latrines is carted away out of the limits of the cantonment. No nuisance has been occasioned by its disposal.
4. Water supply, derived from wells, was abundant. The favourite water with the men was that from the Mahadev well, situated in a grove of trees near the Railway Station. A small quantity of Dilwara water was brought in daily for the use of the regiment, and the wells in the vicinity of the lines were also used by the men. With the exception of Dilwara, the water in all the wells was more or less brackish.
5. The prices of provisions were not so dear as last year, but the food was of inferior quality. Vegetables were very scarce and dear. The shoes of the sepoys fit badly and occasion numerous shoe-bites.

6. These are the same as given in former reports, and have proved not otherwise than beneficial to the general health of the men.
7. The regimental hospital is well placed on high ground, and is clean, well ventilated, and in good repair. As there are no wards or separate buildings for the cases of infectious diseases, temporary grass huts are built for such cases when they occur, and destroyed when no longer required.
8. The health of the corps for the year under report contrasts most unfavourably with that of the previous one. There were 1,990 admissions and twelve deaths in hospital in the year 1878, against 686 admissions and three deaths in 1877. The men suffered considerably from ague; repeated attacks of which have weakened a large number of them, and rendered them liable to the invasion of disease on the least unusual exertion, change of weather, diet, &c. The regiment contains a large number of good physique.
9. The season was a very trying one, and the heat was very great during the months of March, April, and May. The rainfall, which was 19.40 inches against 11.48 inches in the previous year, had great influence in causing this unusual sickness.
10. The total number of admissions into hospital from all causes was 1,990, of which 1,454 were re-admissions. The prevailing diseases were, malarious fevers 1,400, lung diseases 62, muscular rheumatism 69, conjunctivitis 64, bowel complaints 58. Owing to the scarcity of vegetables at Nusseerabad, 46 cases of scurvy were admitted into hospital during the year under review. There were three cases of enteric fever, all of which proved fatal.
11. There were twelve deaths in hospital, four from intermittent fever, three from enteric fever, and one each from cholera, pneumonia, asthma, heart disease, and scurvy. Two deaths occurred out of hospital; one died in Sind, while on a recruiting party, and the other in Bombay while on sick leave.
12. There was only one case of malignant cholera, which terminated fatally.
13. The total number of primary vaccinations was 32, and all were successful. There were 54 re-vaccinations; of this 39 were successful and 15 unsuccessful.
14. Thirty-nine men were invalided, for the following causes—general debility 20, defective eye-sight 7, chronic bronchitis 6, chronic rheumatism 5, internal hæmorrhoids 1; total 39. In addition to these, one man was discharged with a gratuity, for general debility.

Inspection by Deputy Surgeon General WYLLIE.

Inspected 2nd December, 1878. Hospital buildings as at last visit, unless that ceilings are now being put up in the wards, which will add much to comfort, particularly during the cold season. Health has been unfavourable since July, when scurvy appeared, affecting eventually nearly half the Regiment; and for three months past ague has prevailed, almost universally. Thus the average sick to date is more than fourfold in excess of that for previous year. Owing to illness, consequent on overwork, the medical officer was unable to accompany me at inspection; but I realized that the duties are properly conducted by his *locum tenens*, that arrangements are fairly satisfactory, and service of the sick efficient. But the want of sufficient quinine to deal with the numerous severe cases of ague has been much felt, although the authorized supply has been liberally supplemented from private resources. Lines particularly trim and tidy, clean throughout; additional urinals have been constructed on the plan mentioned last year. There are now 3 for men, and 2 for women. They are unquestionably a great convenience, involving much less labour than ordinary pans; and further observation strengthens the favourable opinion formerly expressed of this system. Bad water has long been a source of well grounded complaint. But there is now promise of speedy remedy, as measures for supplying cantonments by gravitation, from a reservoir in the neighbouring hills, are advancing towards completion.

H. M.'s 18th Regiment N. I.

DEESA.—In Medical charge of Surgeon Major A. N. E. RIDDEL.

Average Strength	690	Deaths in Hospital	6
Do. Present.....	629	Do. out of do.	6
Admissions	481	Invalided	59
Daily Sick	11·0	Sick Leave	6

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Deesa	123·5	3·6	...
1876	Do.	81·1	2·5	0·4
1877	Do.	63·6	1·9	...
	Average...	89·4	2·7	0·1
1878	Deesa	76·4	1·6	0·9

1. This regiment was stationed in Deesa till the 6th December 1878, on which date the head-quarters and Right Wing, 366 strong, left it *en route* for Poona, the Left Wing remaining in Deesa.
Location and movements.
2. The same lines were occupied which have been periodically reported for some years past as old, bad, and past repair. Taking everything into consideration, their situation is perhaps as suitable as can be found. The lines and their surroundings; present condition, hygienic and otherwise. The huts are built on the old plan without plinths, the roofs are tiled, ventilation being through the doors and tiles of the roofs. They are apt to leak and tumble down in the wet season. Cubage of each hut about 750 feet. The drainage of the lines and cantonment generally is surface. The bazaar is about three hundred yards distant, and its sanitary condition is carefully looked after.
3. The latrines are situated during the dry season in the bed of the river, which is several feet below the surface of the lines, and in the wet season they are situated on the bank of the river, the trench system being used in both seasons. The lines are kept clean by the regimental sweepers.
Conservancy.
4. Supply sufficient. Quality good. Source from springs. There are six wells in the lines and one in the hospital compound.
Water supply.
5. Owing to the deficient rainfall of the previous year, the prices of all kinds of food rose enormously. As a rule the men seem to me rather underfed. No alteration has been made in the clothing.
Food and clothing.
6. The ordinary garrison duties and escort parties. There is no gymnasium, and the men's amusements seem confined to those in ordinary vogue amongst natives. Neither appear to affect the general health.
Duties, exercise and amusements; their effects on health.
7. The hospital is built in an excellent situation and there are no surroundings except the usual buildings. It is in excellent repair, the accommodation is sufficient, the ventilation complete, and there has been no overcrowding. The latrine is built of brick and answers its purpose completely. Disinfectants are used to the amount sanctioned, and the excreta are removed by the sweepers and night carts.
Hospital and its immediate surroundings; present condition, hygienic and otherwise.
8. The general health has, I consider, been fairly good. The physique of the men compares favourably with that of other regiments which I have had an opportunity of seeing, and owing to a great number of inferior men having been invalided during the year, I believe that it is fit for active service in the field.
General health and physique.
9. The rainfall this year has been unusually high, amounting to 31 inches 28 cents, and the hot season commenced early and continued longer than usual. To these circumstances I attribute the increase in the number of admissions, and especially the increase of cases of ague. The greatest number of admissions from this disease occurred from July to November inclusive.
Influence of climate or local circumstances on health.

10. There were 481 admissions into hospital, including 7 re-admissions, being 92 more than the previous year. There were six deaths in hospital. Six

Details of treated.

men were sent on medical certificate for change to their own country, three for repeated attacks of ague and three for general debility. There were 209 admissions from ague (intermittent fever), being 111 in excess of the previous year. Of these 156 were admitted in the five months between July and November inclusive, the greatest number being in October, when 71 were admitted. Fortunately none of the cases were very severe and for the most part were free from complications. Of the remainder, 33 were from eye diseases, principally conjunctivitis and tarsal ophthalmia, from cutaneous diseases 32, from various forms of rheumatism 25, intestinal complaints 14, diarrhœa 15, dysentery 3, pulmonary diseases 14, principally chronic bronchitis, contusions from various causes 21, blisters of the feet 17, arising from badly fitting boots, syphilis primary 9. This disease is brought into cantonments by females residing outside cantonment limits not subject to any sanitary control; and from the nature of the sores produced, some of them must be in a very advanced stage of disease. Eighteen cases of general debility were admitted and treated in hospital, and some of these were invalided by the General Invaliding Committee at Ahmedabad. There were six cases of chicken-pox, 1 of measles, and 2 of small-pox. The remaining cases do not call for particular remark.

11. There were six deaths in hospital, and six out of hospital. Of those occurring in

Mortality and its causes.

hospital one was from congestion of the lungs, who died a few minutes after being brought to hospital; one from cholera, the only case of this disease which occurred. One death occurred from remittent fever, one from diarrhœa, one from debility in a man originally admitted with keratitis (he was a confirmed opium eater), and one from concussion of the brain and spinal cord, caused by a fall from a tree. Of the six deaths out of hospital which occurred in cases of men absent on leave, three were reported from cholera, one from fever, one from debility, and one from an unknown cause.

12. There were no epidemics. One case of cholera occurred and terminated fatally,

Epidemics.

the patient being in a state of collapse on admission. Cholera was said to be prevalent in the surrounding villages, but this case could not be traced to that source. There were two cases of small-pox in men who had been (apparently) successfully vaccinated; both recovered.

13. The vaccination duties have been carefully carried out. Twenty-four male and thirty female children were primarily vaccinated successfully.

Vaccination and re-vaccination.

Fourteen recruits were successfully and fifteen unsuccessfully re-vaccinated.

14. Fifty-six men were invalided. Of these six were over thirty-two years' service,

Invaliding and its causes.

viz. three native officers, two havildars, and one private. Of the remainder, thirty-four were recommended for discharge by the Commandant as unfit for further military service, three on account of failing eyesight, three on account of rheumatic diseases, five on account of general debility, six for general debility and a tendency to varicose veins, and two as asthmatic, old, and worn out. Three men were discharged with gratuity.

Requirements and recommendations.

15. As recommended periodically for the last two years, a latrine is required for the solitary cells used by the Regiment.

Special observations, new experiences in treatment, sanitation, &c.

16. I have none to offer.

Inspection by Deputy Surgeon General BEATTY.

This Regiment, the Head-quarters of which marched into Poona from Deesa on the 21st December, is located in the lines previously occupied by H. M.'s 5th Regiment N. I. On the date of inspection the sanitary condition of the lines was as good as the old huts will admit of. It is desirable that the lines be rebuilt with raised plinths and improved ventilation. Conservancy is regularly attended to. Water supply excellent. The general health was fairly good. There was an increase of 92 in the admissions into hospital contrasted with the previous year, principally from fevers, which the medical officer attributes to the unusual amount of rain which fell, and the hot season commencing earlier and continuing longer than usual. There were twelve casualties, six in and six out of hospital. Of the latter three are reported to have been cases of cholera. The hospital was found remarkably clean, books and records written to date, and diaries of cases most carefully preserved.

H. M.'s 20th Regiment N. I.

BARODA.—In Medical charge of Surgeon H. DeTATHAM, M.D.

Average Strength	699	Deaths in Hospital	9
Do. Present.....	670	Do. out of do.	4
Admissions	1050	Invalided	35
Daily Sick.....	22·5	Sick leave	20

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Bombay	98·9	4·8	1·4
1876	Do.	119·1	7·0	2·1
1877	Do.	95·3	3·8	0·7
	Average...	104·4	5·2	1·4
1878	Baroda	156·7	3·3	1·5

1. The regiment has been stationed at Baroda throughout the year, no movement having taken place. One or two recruiting parties have as usual been detached from head-quarters at different times.

Location and movements.
2. Since last report the regiment has moved from the old temporary lines (built originally for the 9th Regiment N. I. and now pulled down) to the lines formerly occupied by the 22nd Regiment N. I., which have been much improved, having undergone a thorough repair. The ground on which they stand has been raised about a foot, and the floors raised *another* foot above the level of the outside ground; the walls and ridges of the pendals were also raised. The site is admirably shaded by trees; there is no overcrowding, and the men appear to be well satisfied with the change. Some of the married quarters have inside bathing places, the water being conveyed away by small (open) tributary channels into a central drain running down each street, which empties itself into a kind of trench which surrounds the whole lines and discharges itself into a neighbouring nullah. *Practically*, however, these drains only come into play during the rains; at other times the amount of waste-water being small, it soaks into the ground or evaporates in front of the huts.

The lines and their surroundings; present condition, hygienic and otherwise.
3. The conservancy of the lines is well maintained, no objectionable deposits are allowed, and the general sanitary condition of the lines, their surroundings, of the Sudder Bazaar, and of the camp generally is satisfactory. It is important however to note that during the late excessive rains a portion of the lines were flooded, although I am told that the water did *not* actually flow *into* the men's houses. There is ample *pukka-built* latrine accommodation, which however is only used *during the rains*; for the rest of the year the "trench-system" is adopted; there are two enclosures (for men and women respectively) surrounded by matting, these are situated to the South-East of the lines, about 200 yards distant, but it is found necessary to post police sentries to enforce their being used, and prevent the men from defiling the surrounding country instead. The space occupied by the men's enclosure is not large enough, a nullah limiting the available space, and the only other space which could be used would be to windward of the lines and therefore objectionable. The sanctioned conservancy establishment is regularly maintained.

Conservancy.
4. The water supply is entirely from wells, five being in the lines at present occupied, and four on the site of the temporary lines now pulled down; the latter are covered, but their circuits are not paved, while the former have paved circuits but are not covered. During the hot weather before the rains the supply was scanty, but it is now (at the end of the year) abundant. I am not in a position to report upon its quality from analysis, but it is clear to look at, though slightly brackish in taste, and there does not appear to have been any prevalence of such affections as an impure water supply would explain. I am not aware of any source of contamination unless from the leather buckets in which it is drawn and the mussacks in which it is distributed. The latrine enclosures are sufficiently distant from any of the wells to prevent the risk of contamination, and besides, the current of the subsoil water flows in the other direction.

Water supply.

5. The ordinary articles of food, such as the native soldiery require, are dearer in

Food.

Baroda than in Bombay, where the regiment was previously stationed, and their quality is stated to be inferior. The average grain compensation to fighting men for the past year has been a few pies less than Rs. 4 per month. Vegetables are said to have been dear and very scarce in the hot weather, but from enquiries I have lately made in the bazaar, they appear to be *now* both abundant and cheap; and following my usual custom, I have done my best to impress upon the men the importance of eating fresh vegetables whenever they can be procured, and also of varying their usually monotonous diet more than, when not prompted on the subject, they are disposed to do.

6. The duties of a regiment stationed at Baroda are comparatively light, the guards

Duties, exercise and amusements; their effects on health.

being but few; the ordinary parades have of course been held as usual; and during a portion of the year the men were busily employed in carrying out the repairs and improvements of the lines they now occupy; the duties performed do not appear to have had any prejudicial effect on the health of the regiment. Since the regiment has been at Baroda, the *talim-khana*, a time-honoured regimental institution which had been discontinued in Bombay for want of leisure, has been re-instituted.

7. The hospital used by the regiment is the same as reported on last year; it is a fairly

Hospital and its immediate surroundings; present condition, hygienic and otherwise.

suitable building affording sufficient accommodation without overcrowding for about 24 men inside, and 12 or more in the verandah. The roof is out of repair, and the floor (formed of red bricks set edge-ways) is very uneven and difficult (indeed, almost dangerous) to walk upon. I brought the latter to the notice of the Major-General Commanding the Northern Division at his recent inspection of the hospital, and I have hopes that the expenditure necessary for its repair will be sanctioned. The hospital is clean and well ventilated; it is not surrounded by any compound, but its immediate vicinity is in a good sanitary condition. The village of Gowleepoorā (within a few yards of the hospital) was found objectionable from the number of cattle kept there, the tom-tomming at night, &c., and on a representation to that effect being made to the agent to the Governor General, it was ordered to be cleared of its inhabitants; this is a great boon to any man seriously sick in hospital, a quiet night being (under the old system) out of the question during any native holidays or on other festive occasions. In my report for last year I stated that the quarters for medical subordinates were very inferior; I *should* have said that there were absolutely *none*, for the quarters at present standing are I believe only intended for the second class servants; and I am therefore obliged to permit the medical subordinates to occupy *two* of the four corner rooms of the hospital, which ought properly to be retained as isolation wards for ophthalmic cases, &c. Application has been made for hutting-allowance for the *one* Hospital Assistant at present attached to the regiment. I hear that the regulation allowance (90 rupees) has been sanctioned, and that the subordinate in question will be accommodated with quarters before the hot weather. For latrine accommodation, the inmates of the hospital are permitted to use a portion of one of the *permanent* latrines which is partitioned off for their use: this is kept in a good sanitary condition by the hospital sweepers. The hospital has no bathing room, or dead-house.

8. The general health of the regiment may *now* (at the beginning of the year 1879)

General health and physique.

be pronounced *good*; it is true that *some* of the men show traces of a scorbutic tendency, but I question very much whether a native regiment is *ever* (except perhaps after some months' active service, when they have been drawing Government rations) *entirely free* from the disease, as there is always a certain proportion of men who from motives of economy habitually under-feed themselves, in order to provide for the daily wants of their families; and of course when high prices prevail the temptation to do so is increased, the higher rate of grain compensation given at such times being calculated on the daily requirements of *one* man only, and not on those of a family. Speaking generally however I am of opinion that the regiment is quite as fit for active service as any corps in the Bombay army, while as regards physique, owing to the great care taken in recruiting of late years, and in weeding out old and useless men, I think there can be little doubt that the regiment is in that respect superior to most others.

9. The total admissions into hospital were 1,050, and the average daily number of sick

Details of treated.

(for the whole year) 22·5. The highest monthly average daily sick was 37·2 (in October) and the lowest 12·2 (in June). Of the total admissions 458 were due to malarial fever, of which 6 only were registered as "remittent." The admissions for ague were very numerous during the last four months of the year, amounting to 329 for that period; but the cases do not appear to have been very severe in type, as the average daily sick for the same period was only 27·9, the men, for

the most part, remaining only a few days in hospital. 186 cases were registered as febricula. Four cases of cholera were admitted, one in June who died, and three in August, all of whom recovered. Six cases of small-pox occurred; all recovered. Dysentery and diarrhoea furnished 13 and 31 cases respectively, hepatitis 2, both of which recovered, one case of phthisis ended fatally, other respiratory diseases furnished 25 admissions only. 14 admissions were registered under the head "scurvy" (13 of which occurred in December), and some others, as already mentioned, show traces of the disease. 12 cases of venereal disease were admitted, and 36 eye affections; rheumatism, contusions, &c. furnished their usual quota. 20 men were granted sick leave to their own country for periods varying from one to six months.

10. Nine deaths are registered as having occurred in hospital, one each from ague, cholera, phthisis, bronchitis, pneumonia, and disease of the liver, and three from debility.

11. These have been duly attended to; the hospital records show 26 primary operations, all successful; and 87 re-vaccinations, of which 58 were successful.

12. Thirty-five men were invalided during the year; of these 16 were time-expired men (over 32 years' service); of the remaining 19, 12 were invalided for general debility, accompanied in some instances with deafness, defective vision and chronic rheumatism, 1 for lumbago, 1 for defective vision, 1 for heart disease, 1 for secondary syphilis, 1 for dementia, 1 for deafness, and 1 for general unfitness for service as a soldier.

13. Under this head I venture again to urge the introduction into the native army of Surgeon General Longmore's "test-dots" for the visual examination of recruits, and to call attention to my remarks on the subject in my annual reports on the regiment for 1873 and 1874. I also beg to repeat the suggestion made in my report for 1874, that the compound of every native hospital should be provided with a *brick-oven* in which (by lighting a fire underneath) the *bedding, clothing, and uniforms* of patients affected with contagious disease might be subjected to a sufficiently high temperature to thoroughly purify and disinfect them.

Inspection by Deputy Surgeon General WYLLIE.

Inspected 8th January, 1879. This hospital I found much better ordered than at previous inspection, the management now being in more competent hands; and I was satisfied with what I saw, fully realizing efficiency and good organization in its different arrangements. Buildings unchanged; quarters for Assistants are about to be provided, and the floor of the hospital to be re-laid. The objectionable proximity of a native village, as noticed before, has been less felt of late, now that proper conservancy has been strictly enforced, and nuisance from this cause is no longer complained of. The temporary lines, in occupancy at last visit, have recently been removed, and the men are now quartered in the permanent lines latterly occupied by the 22nd; they have been much improved, cubage increased, floors raised, and some defects as regards sullage from family quarters are now about to be remedied. Health relatively has been well maintained, considering the excessive rainfall; for although there was a large increase under ague, yet the daily ratio of sick to strength was very little more than in previous year, significant of the cases having been comparatively of little account.

H. M.'s 23rd Regiment N. I.

MHOW.—In Medical charge of Surgeon J. SIMPSON, M.B.

Average Strength	704	Deaths in Hospital	7
Do. Present	682	Do. out of do.	3
Admissions	1,084	Invalided	43
Daily Sick	28.4	Sick Leave	18

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875.....	Nusseerabad.....	105·7	2·8	0·1
1876.....	Mhow and Indore	140·4	5·6	0·6
1877.....	Do. do.	123·4	3·5	0·6
	Average...	123·2	4·0	0·4
1878.....	Mhow.....	158·9	4·2	1·0

1. The head-quarters of the Regiment were stationed at Mhow up to 14th November, when they left for Ahmednagar, arriving on the 14th December. The Right Half Battalion was stationed at Indore up to 12th May, when it rejoined head-quarters. The Left Half Battalion remained at Mhow until the 15th December, when it left for Ahmednagar.

2. The lines are situated to the north of the city of Ahmednagar, and are in good habitable condition throughout. They are built on a ridge of trap rock, with sufficient slope for drainage. The surrounding ground on all sides is dry, and there are no depressions for water collecting. To the North-East and South the ground is open. On the West side is the Regimental bazaar, on the South-West and in close proximity is the city. Some of the pendals are raised on a plinth, others are not, but from the nature of the ground there is no soakage from below, and they are never damp. The married quarters are provided with bathing places of pukka brick and chunam, the water is collected in proper receptacles outside and at once removed.

3. The conservancy of the lines is good; the Regimental latrines are kept clean and are used throughout the year, as from the position of the lines and nature of the soil in camp it would be impossible to use trench latrines.

4. The lines are supplied from the Kapurwaree aqueduct, which is of good quality and sufficient in quantity.

5. A good and plentiful supply is always to be had in the city or Regimental bazaar, and although dear, the sepoy need not want, as he gets good grain compensation.

6. The duties are ordinary Regimental duty and guards on the jail and treasury. The gymnasium has now been opened, and a great many men and boys are exercised there.

7. The hospital is in good repair, situated to the South of the lines. The building runs North and South, and is built on a good plinth and consists of one large ward, with small separate ward, the verandahs on the North side being closed in. There is a separate building in the compound, well suited for a contagious disease ward. The hospital affords sufficient room for the sick. The latrine is connected with the main buildings by a covered way, but is, I think, too near, and not on such a good plan as it might be.

8. The general health of the Regiment was not so good during the past year as in the previous. This I have no doubt was owing to the unusual fall of rain at Mhow last year, and the unhealthy state of the lines.

9. The climate of Mhow was very unhealthy last year; the unusual fall of rain had a marked effect on the increase of sick, especially on the malarial fevers, the admissions being more than double that of the previous year.

10. The returns contrast unfavourably with last year. The admissions for the year give a total of 1,084; of these, malarious fevers give 625, the months of September, October and November giving the highest numbers. Injuries came next, chiefly from shoe-bites from bad boots. Rheumatic affections, including lumbago, have contributed a large share. Diarrhœa and dysentery give a large proportion of cases this year. Of the total 1,084 admissions, 1,029 were discharged to duty, 7 deaths and 23 discharged otherwise.

- Mortality and its causes. 11. Ten deaths occurred during the year, seven in hospital and three out of hospital. The seven were from epilepsy, cholera, ague, bronchitis, and small-pox.
- Epidemics. 12. There has been no epidemic in the Regiment during the year.
- Vaccination and re-vaccination. 13. Vaccination and re-vaccination have been carried on among the recruits and children.
14. Forty-three men were invalided during the year, of which 31 were aged and worn out men, two from lung disease, two from defective eye sight, one from aneurism, one disease of hip joint, one from hernia.
- Invaliding and its causes.
- Requirements and recommendations. 15. The only recommendation that I have to make is that quarters be built for the Native Medical Pupils attached, as at present they have none.

Inspection by Deputy Surgeon General BEATTY.

The head-quarters of the Regiment arrived at Ahmednagar on the 14th of December 1878; my inspection was made on the 23rd of the same month. The lines, which are built on an elevated site, have good surface drainage, and are kept perfectly clean. The bathing arrangements in the verandahs of the married men's quarters have been completed since last report. Regimental latrines are in use, as owing to the rocky nature of the soil, the trench system is found impracticable. Water supply is excellent both as regards quantity and quality. The hospital, which is well situated, was in good repair, and the books, instruments, &c. were carefully kept.

H. M.'s 24th Regiment N. I.

MEHIDPUR.—In Medical charge of Surgeon J. E. FERGUSON, M.B.

Average Strength.....	704	Deaths in Hospital	13
Do. Present	690	Do. out of do.	1
Admissions	1,258	Invalided	21
Daily Sick.....	26·3	Sick Leave	1

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875.....	Neemuch	166·4	3·6	1·1
1876.....	Mehidpur	120·7	2·8	1·0
1877.....	Do.	151·5	3·4	1·9
	Average...	146·2	3·3	1·3
1878.....	Mehidpur	182·3	3·8	1·9

- Location and movements. 1. The head-quarters* of the 24th Regiment N. I., average strength for the period 374·4, was stationed at Mehidpore during the past year.
2. The lines, which are of ten years' standing, have been shown in former reports to be defective in many points. The huts are not built on plinths. The quarters for the married and single privates are the same size, and compared with the new standard plan for native lines, are greatly wanting in superficial area and cubic capacity. The flooring of the huts is composed of red earth mixed with moorum rammed down, and this has been found sufficient to keep out ground moisture. The site being level, there is considerable difficulty in getting storm or waste water to run off in the surface drains. Some extra attention to them however prevented any flooding during the rains, and the formation of any stagnant pools. The huts are in a fair state as to repair, and after the rains, they were all whitewashed outside and inside (inside for the first time). But it is impossible to remedy by repair the original defects as to position and construction of the existing lines, and until

* Details of Left Wing at Augar are given in a separate report.

another site is selected and new lines constructed on the standard plan, the present high rate of sickness may be expected to continue.

3. Conservancy is well attended to. The trench system is in force during the dry season. From a sanitary point of view it seems to answer pretty well, but the distance of the trenches from the lines being 370 yards, and the fact that the system is not in favour by the men and their women, are disadvantages. In the monsoon of 1875 temporary latrines were introduced, and have been in use during the rainy seasons since, but as these places are rudely constructed, they are both insanitary and uncomfortable. The only masonry work in their construction is the horse-shoe shaped recesses for holding the pans. The flooring is liable to become soaked with urine and the water used in ablution. At the annual meeting of the Committee for reporting on station buildings, new permanent latrines were applied for, and they are really urgently required.

4. A constant supply of good water is still a desideratum. The existing conditions as regards water supply may be briefly stated as follows:—Water is procurable from four wells in the vicinity of the lines and from the river Sepra. One of these wells, viz. in the mess compound, contained a good supply of water the whole year, but the quality of its water is very hard, and not pleasant to the taste, containing about 44 grains to the gallon of dissolved matter, chiefly lime and magnesia, in combination with chlorine and sulphuric acid. There is another well on the bank of the river. In the month of June there was a scarcity of water in this well, it was then cleaned and deepened, since which it has yielded a continuous supply of tolerably good water. The other two Regimental wells, although considerably deeper than the level of the bed of the river, contained very little water during the year, and what they did contain was unfit for drinking purposes. At present they are almost dry. In the cold season and for the greater part of the rainy season the river water is unquestionably preferable to that of the wells, as it is less highly charged with mineral and organic impurities, and is more pleasant to the taste. It cannot however be regarded as a first class water, and at all seasons should undergo filtration to complete its purification. In the hot season, when the flow becomes sluggish, the river water is decidedly bad in every respect; it is always turbid, and being subject to the usual sources of pollution to which rivers in this country are liable, it cannot be free from organic impurities. Viewed in a glass vessel it is quite opaque, from the presence of suspended matter, which takes three days to subside. In the rainy season, the river water generally contains a considerable amount of suspended matter washed off the banks by the stream; this however soon subsides, and the water is then fairly drinkable. In the hot season the river water should not be used for drinking purposes, without first having undergone filtration. From the above remarks it will be seen that there is great difficulty in procuring an adequate supply of good water in the hot season, the serviceable wells having a tendency to get dry, and the river water to become bad. Deepening the wells does not appear to have any effect in increasing the supply of water, so that the only remedy I can suggest is to provide means for filtering the river water on a large scale, and the supply thus obtained used by the Regiment for drinking purposes. It should be added that there are several wells at some distance from the lines, which contain an abundant supply of good water all the year round.

5. There is a small regimental bazaar from which the men may purchase supplies, but unless they wish credit, they prefer to get their supplies from the city of Mehidpore. There was a scarcity of vegetables in the hot season, but during and after the rains native vegetables were to be had in considerable abundance. The men also occasionally receive vegetables from the station garden. The average monthly allowance to each fighting man as grain compensation for the year was Rs. 2-2-2. Taking the following as an ideal diet scale for one man per diem, viz. mutton 8 oz., dhall 4 oz., wheaten flour 1 lb., rice 6½ oz., ghee 2½ oz., with a variable quantity of vegetables, the average cost for the year was at the rate of Rs. 6-8-0 per mensem, but it is evident that men with families could hardly afford to adopt this scale. There has been no change in the clothing of the men. The beneficial results arising from the adoption of woollen socks for the feet, brought into use for the first time before the Regiment marched to Delhi, are apparent from the diminution of admissions into hospital for blistered feet.

6. The duties are the usual routine of parades, musketry and guard duty, an average of about four morning parades and three evening parades per week, and the annual course of musketry. The average number of consecutive nights in bed for all ranks was 6½. There is a gymnasium, and many of the men engaged in gymnastic practice under two competent instructors. The recruits have a three months' course of instruction in gymnastics. The

duties are by no means excessive, and with the exception of guard duty, have a beneficial effect upon health.

7. The large building is estimated to accommodate 20 patients, exclusive of two verandahs, which can also be used as wards in case of need. The subsidiary building erected in 1875 has space for 16 beds, and the contagious ward for 4. During the year under review 56 was the largest number of patients in hospital any day; at that time the verandahs had to be used as wards. In anticipation of a still greater number of patients the boys' school was placed at disposal for an hospital, and the patients occupying the verandahs of the large hospital were removed to the school. The ventilation of the large hospital has been reported as defective by former medical officers, there being only two narrow ridge ventilators on the roof. With all the doors and windows shut, the amount of change of air which could take place by these ventilators would be insufficient, were there more than 10 patients in the ward; but by opening some of the doors and windows, ventilation can be made quite sufficient. The hospital buildings are near to the lines. With the exception of a dead-house, all the necessary outhouses are attached. Conservancy is well attended to and the whole is in a fair state as to repair. The hospital water supply is derived from the river and from a well on the bank of the river.

8. Although the number of admissions into hospital during the past year was far greater than the year preceding, yet the general health cannot be considered as having been unusually bad for a station like Mehidpore. On the other hand, if the figures showing the amount of sickness be compared with those of Regiments formerly stationed here, it will be seen that the average daily number of sick in hospital for the year under observation is considerably below the mean of all years since 1870. Still the amount of sickness is considerably above the general annual mean of the Regiment, and is but the evidence of another year, that Mehidpore is a very malarious station. These facts may be conveniently shown in a tabular form:—

Daily average number of sick per cent. to strength of Right Half Battalion H. M.'s 24th Regiment N. I., for the year 1878.	Daily average number of sick per cent. to strength of Right Half Battalion H. M.'s 24th Regiment N. I., for the year 1877.	Mean daily average number of sick per cent. to strength of all regiments stationed at Mehidpore, from 1870 to 1878 inclusive.	Mean daily average number of sick per cent. to strength of H. M.'s 24th Regiment N. I., from 1870 to 1878 inclusive.
4.6	3.4	6.73	4.3

The sole cause of this high sick rate is malarious fevers. A great many of the men show evident marks of the effects of repeated attacks of fever, and when it is remembered that 77 per cent. of the whole strength has been under treatment, the majority oftener than once for ague, it will be realized that the general health of the Regiment has suffered considerably during the past year, and that a change of station is now highly desirable. The general physique of at least one-third of the men of this wing is poor. The tendency to enlist recruit boys and others having family ties with the Regiment, overlooking their indifferent physique, is undoubtedly a very deteriorating influence.

9. In former reports it has been pointed out, that the present site of the lines is rendered unhealthy from the lowness of the situation, which is liable to become inundated during heavy rains, and cannot be efficiently drained, from the soil being very retentive of moisture and highly malarious, from the indifferent quality of the water supply and from its proximity to a filthy native town and to the river in which men are constantly catching fever by too frequent bathing. It has been proposed to remove the lines to the situation at the S. W. limits of the camp, which was formerly occupied by the Cavalry. The advantages claimed for this site are that it is on a higher level, and there is a good water supply from wells already made. During the last rains the ground in the immediate neighbourhood encircling at least $\frac{3}{4}$ of this proposed site was a swamp, while the surroundings of the present lines was free from flooding throughout the whole of the rains.

10. From an average strength of 374.4 there were 963 admissions into hospital from all causes. The daily average number of sick was 17.2, *i.e.* 4.6 per cent to strength. The average sick time to each man of the strength was 17 days. Although there were 963 admissions, only 336 different persons were admitted, as shown in detail in the following form:—

	Caste.				
	Christian.	Mussulman.	Jain.	Hindoo.	TOTAL.
Average strength	16·2	47·6	7·1	303·5	374·4
Admitted from all causes	16	130	8	814	968
Not admitted	8	.....	4	26	38
Once admitted	2	13	1	82	98
Twice „	5	13	...	52	70
Thrice „ .....	.....	8	1	45	54
Four „	1	5	1	48	55
Five „ .....	.....	2	...	23	25
Six „ .....	.....	6	...	13	19
Seven „ .....	.....	1	...	6	7
Eight „ .....	.....	.....	...	3	3
Nine „ .....	.....	.....	...	3	3
Ten „ .....	.....	.....	...	2	2
Total.....	8	48	3	277	336

About two-thirds of the whole number of admissions, or 658, were for malarious fevers, which were as usual most prevalent in the months of October and November, and were nearly all of the uncomplicated quotidian type. The average duration of each case was 4·9 days. Only one case of remittent fever occurred. Comparing the number of admissions from malarious fevers with the general mean annual of all Regiments stationed here from 1870 to 1873 inclusive, it will be seen to be below average, so that viewed in relation to the locality, the sickness from malarious fevers is not to be considered high. The treatment of ague was conducted with a view to determine the relative value of the different febrifuges used, and the following are the results, shown in a tabular form:—

Number of cases treated.	Names of medicines.	Average quantity of medicines used in each case.	Average number of paroxysms after administration of medicine.	Average number of days under treatment.
48	Quiniae	37 grs.	2·1	3·9
19	Hypodermic Injection.	12 grs.	2·0	4·0
29	Quinidinæ	43 grs.	1·7	4·0
180	Cinchonæ Febrifuge.	49 grs.	2·9	4·0
108	Bebriæ Sulphas...	42 grs.	3·1	4·4
72	Liquor Arsenicalis	58 ms.	3·2	4·9

The majority of cases however received a mixed form of treatment, *i.e.* one febrifuge having failed, another was tried. Of the remaining two-thirds of admissions, diarrhœa and dysentery together give 95, 63 for the former and 32 for the latter. Dysentery was most prevalent in the months of June, July, and August, and the majority of cases of diarrhœa occurred in May and June. These, it will be observed, were the months in which the quality of the water was decidedly bad, and it may be reasonably inferred that this had something to do with the outbreak. Chest affections gave 40 admissions, 31 having been for bronchitis, 6 for pneumonia, 2 pleurisy, and 1 bronchial catarrh. There were only 17 admissions for rheumatism. Syphilis primary and secondary each constitute 6 admissions, and gonorrhœa 5. Diseases of the eye were not prevalent, there having only been 6 admissions. Diseases of the cutaneous system give 19 admissions, nearly all for boils. The remaining causes of admission need not be specially referred to, as they were all for the ordinary diseases met with, and with few exceptions were of a mild character. Cholera is noticed under epidemics.

11. Excluding cholera, from which there were 3 deaths in hospital and 1 out of hospital, the mortality from other causes has not been high, there having been only 3 deaths, viz. 1 from pneumonia, 1 bronchitis and 1 scurvy. In the last named cause scurvy was the primary affection, but death resulted from complications arising out of the scorbutic diathesis, heart disease and general dropsy having supervened, and where the immediate cause of death was clearly shown from the post mortem examination.

12. Eleven cases of cholera occurred in the lines and were treated, some in the contagious hospital and others in a provisional hut erected for the purpose to leeward, and at a distance of 300 yards from the lines. The circumstances in connection with each case were minutely investigated at the time of its occurrence, and all available precautions taken to prevent the spread of the disease. The first two cases occurred, 1 on the 30th March and 1 on the 25th May, when Surgeon Howell was in medical charge, but no satisfactory evidence could be adduced as to the source of contagion in either case. On the 7th June a death from cholera occurred midway between Mehidpur and Oojein, in an escort party returning from Oojein, where cholera was then raging. When the remaining men of the escort arrived at Mehidpur on the 8th, they were not allowed to go into the lines, but were put under canvas at some distance off, and every precaution taken to prevent communication with the lines. Two days after their arrival, and when they were still in quarantine, a woman was attacked with cholera, but from a thorough investigation it appears that she had no personal communication with the men of the escort. The next case occurred 12 days later, namely on the 22nd June. The patient was the wife of a Subedar and, as in the last case, no reliable evidence could be found pointing to the source of contagion, although it is likely that the case had some connection with the preceding. Next day this woman's child was attacked, and here the source of contagion was evident. Four days later another case occurred, the patient being a private, and in this also it was affirmed on all sides that no personal communication had taken place with either of the last two cases, and no other source of contagion could be discovered. Seven days later two more cases occurred, equally devoid of proof as to personal communication with an affected person or place. On the 8th of July, four days after the occurrence of the last two cases, a child was attacked, and 3 days later a private's wife. In neither case was there any evidence of communication with an affected person or place. The last case occurred on the 25th September, and in this instance too great an interval of time had elapsed to justify an inference that it had any connection with the preceding. Of the eleven cases which occurred five were fatal. It is exceeding difficult to obtain any trustworthy information relative to the occurrence of cases of cholera in the native town; during the past year I did not hear of a single case having occurred there. Four cases of small-pox occurred, three in February and one in April. In one case the patient was a woman and in another a child. They had all been previously successfully vaccinated, and, except in the case of the woman, the disease was of the discrete form.

13. Eighteen persons were primarily successfully vaccinated, and of 197 re-vaccinations, 100 were successful.

14. Eight men were invalided during the past year, *i. e.* 2·14 per cent. to strength. The causes were one each for emphysema, defective vision from old age, defective vision from amaurosis, varicose veins, general tuberculosis, caries of right tarsus, and two for general debility. In none of these cases was influence of the climate of Mehidpur the immediate cause.

15. A dead-house and post mortem dissecting table should be provided for the hospital. There is no filter at the hospital, and as the quality of the water is frequently very bad, a filter should be supplied.

16. From what has already been said, it will be seen that the year under observation has not been an exceptionally unhealthy one for the station, although the amount of sickness has been very considerable. With the exception of last year, the average daily number of sick has been lower than in any year since 1870 in this station.

From what I can discover from former reports, it does not appear that the amount of rainfall has so decided an influence on the sick rate as might be supposed. Thus in 1873 the 25th Regiment had an average daily sick of 10·2 per cent. to strength and the rainfall was 35·45 inches, and there is no mention of flooding having occurred. In 1875 the rainfall was 40 inches, while the daily average sick per cent. to strength of the 10th N. I. was 6·6. In 1876 the site of the lines was inundated during the rains, still the amount of sickness from malarious fevers was only slightly above the average. In the year under observation the rainfall was above the average, viz. 36·95 inches, the amount of sickness from malarious fever was below the average. I believe that much of the comparative healthiness which the Right Wing of the 24th N. I. has enjoyed during the last two years it has been stationed here,

has resulted from the adoption of cots for the men to sleep on, and from the care that has been bestowed in keeping the lines dry and clean. The Left Wing, stationed at Augar during the year, has only had about one-fourth of the sickness, and as the Right Wing has been almost two years stationed at Mehidpur, a change of Wings is now highly desirable.

Inspection by Deputy Surgeon General WYLLIE.

Inspected December 16th, 1878. No change in hospital buildings, which are in good order and sufficient, a dead-house alone being wanting. Water supply much augmented since last visit, by clearing out and deepening wells. Lines in fair repair, cantonment trim, and cleanliness with efficient conservancy duly enforced. Health was well maintained up to October, when ague became prevalent; admissions in Hospital to date fully a half more than in previous year, the excess accounted for under that head; but the daily average sick has only advanced from 13·7 to 17 at date, the cases having been relatively of short duration. Mortality, excepting 3 deaths from imported cholera, (in March, June, and September,) was very moderate, and there has been no casualty from malarious fever. Looking at results as above, and particularly in relation to the ordinary malarious influences of a large rainfall (36 inches 3 cents as against 20·8 in previous year), the position taken in my letter No. 169 of 1878, advising a further trial of the hitherto sickly station, appears to be fully justified, for undeniably unfavourable as local conditions are, it is to be remembered that up to 1857 the station had been fairly sanitary, and that ill-health dates from a flood that then deposited a large amount of silt, the effects of which, as respects the subsoil water, may be expected to gradually disappear. Meanwhile local ameliorations are in progress, drainage extended, and the dampness of the lines mitigated by raising floors. But of these improvements none, as I believe, has been so much in the interests of health as Colonel Henderson's forethought in providing each of his men with a cot, as noticed last year.

Left Wing 24th Regiment N. I.

AUGAR.—In Medical charge of Surgeon J. C. LUCAS.

1. The wing has been quartered at this station throughout the year. Individual men have however been transferred to, or retransferred from the Head-quarters at Mehidpur and *vice versa*. Once every month a party, consisting of 1 naique and 9 privates, march on Koondekeri, which is midway between this and Mehidpur, to relieve a similar party from the latter and escort the pay of the half Battalion.

Location and movements.
2. The lines doubtless have been described in previous reports, but still a few remarks on some of the more salient points may not be out of place. They are built on high ground, being some two feet higher than the average level of the cantonment, and consist of three and a half double rows of huts, which have quarters at either side running from West to East and facing North and South. The direction of the prevailing wind being also from West to East, there is therefore no obstruction to the movement of air to all parts of these lines. In this respect they possess an advantage over those of the Cavalry Regiment stationed here. There exists however one great drawback from the position of the Regimental latrines, which unfortunately are situated *vis-à-vis* and windward instead of leeward to the lines. The huts are in good repair. The bazaar is situated at a convenient distance and kept tolerably clean.

Lines and surroundings, present condition, hygienic or otherwise.
3. The latrines are the same as last year, and no change has been made in them. The (windward) situation of these, in respect both to the lines which they face, and a bungalow (the only available one) in the occupation of the Adjutant and Medical Officer, is the most prominent disadvantage. The removal of excreta is done by sweepers, to trenches at sufficient distances, which are filled up with earth and fresh ones dug.

Conservancy.
4. The sepoys and their families obtain their supplies of water for drinking and cooking purposes from four wells situated in and near the lines. The quantity is ample for the requirements, and the quality good. The annual rainfall amounted to 41 inches and 56 cents.

Water supply.
5. The men diet themselves, obtaining their supplies from the regimental bazaar, and that in the city. Grain in these parts is good, and the prices, although fluctuating with the ordinary operations of trade, are, on the whole, tolerably satisfactory and cheap. But meat at certain seasons is scarce and

Food and clothing.

of inferior quality. The various articles of the sepoy's food generally are abundant and obtainable at moderate prices. The average of monthly compensation received during the year was Rs. 1-14-10. Vegetables as a rule are not very plentiful in the local market, but there is a somewhat flourishing garden situated near the lines, which is maintained by voluntary subscriptions and labour, and supplies the men with vegetables at a trifling cost, and it is owing to this fact that the returns show entire immunity from scurvy. In respect to clothing I believe that no material change has yet been instituted in any of the Native Infantry Regiments in this command. The present regulation dress is fairly good during the cold season, provided suitable under clothing is worn and also socks (to prevent shoe-bite). But for the hot months the dress of the sepoy needs considerable alteration and improvement. Loose, white or yellow drill tunics, knickerbockers of the same material and colour, with gaiters made with the same kind of leather to match the belt, and a tolerably heavy white or yellow pugree, would I fancy if adopted prove most serviceable, healthful and economical.

6. The duties here are light, there being only regimental parades; guards, practice of musketry on the range, and there is but one station guard furnished by the detachment; and that is for the jail. The average number of consecutive nights in bed for the year has been 6.10. Some of the men take to gardening, which is about the only exercise or amusement I know of in which these men spend their leisure hours.

7. The hospital building possesses rare advantages, being situated on a small hill and open to the breeze from all directions. The accommodation consists of a good sized ward with lofty roof, and a floor space of 1,497 square feet. It has three pairs of opposite doors, and the same number of opposite windows facing West and East and opening into fine large verandahs, having shade; and there is another pair of doors opening into small verandahs on the North and South sides. This ward, in addition to the ventilation by these doors and windows, has excellent ventilators in the roof and walls. At each end of this ward there are two comfortable rooms, each having two large windows. They are all of the same size, with a floor space of 125 square feet. There is a detached house, which is of great use to the medical officer for making post mortem examinations. This room from its situation has been, and might be used, when required for solitary cases of cholera. There are good quarters for the medical subordinates and servants. The conservancy is well attended to. The surroundings are favourable. The condition of the hospital generally leaves nothing to be desired.

8. The general health of the wing is fairly good, but the physique is indifferent.

9. Climatic influence on health will be seen by a glance over the following table, made out from observations on temperature and rainfall recorded, and from the register of sick. During the year no extraordinary meteorological phenomena occurred:—

Months.	Rainfall.		Temperature of air in shade.			Percentage of Sick to Strength.	Remarks.
	Inches.	Cents.	Max.	Mean.	Min.		
January	56½	66.1	60.4	54.8	2.6	Mostly cases of ague in these months, from subsoil moisture and excessive herbage in consequence.
February .....	.....	.....	79.	71.5	64.1	3.2
March .....	.....	81½	88.7	81.1	73.5	2.6
April .....	.....	½	94.2	86.9	79.6	3.2
May	1	54½	97.	90.1	83.2	1.9	
June	4	47½	96.8	91.3	85.8	6.8	
July	17	45	84.6	81.6	78.6	6.5	
August	10	86	82.8	79.8	76.8	2.3	
September	6	59	83.4	78.4	73.4	19.0	
October .....	.....	.....	87.7	81.9	76.1	26.5
November .....	.....	.....	80.1	73.4	66.7	11.9
December .....	.....	.....	74.	68.6	63.2	5.3
Annual Total	41	57	994.4	945.0	875.8	91.8	
Average	3	46.4	82.8	78.7	72.9	7.65	

The soil is composed of a loose, dark loam, and in various sites there is iron, which predominates in the immediate vicinity of these cantonments, which seem to be built on a bed of ferruginous clay. The drainage of the station is very good, and in various places advantage seems to have been taken of the natural features, in order to afford facility to the draining of rain water. The close proximity to the native town and some villages (which like most others are very defective in sanitary arrangements) is one of the main drawbacks. I believe that the ferruginous nature of the soil here accounts in a great measure for the marked immunity of the troops from epidemics of cholera. The climate of Augar is on the whole good, and seems to have agreed with the men.

10. During the year there were 293 cases under treatment, 3 having remained on 1st January 1878, and 290 fresh admissions; out of these 7 terminated fatally. As usual, throughout India, paroxysmal fevers head

Details of treated. the list of diseases, with 197 treated against only 43 of the previous year. Out of these cases of malarial fevers, there were but 2 cases of remittent, 25 of the tertian, and the rest of the quotidian, types. Venereal diseases (syphilis and gonorrhœa, including bubo) gave 14 admissions against 9. There were 3 cases of cholera, of which 2 died, against none. It will also be seen from the return that 3 cases of variola were admitted, of which all recovered, against 1. These figures are of the men. During the year 8 women and 6 children were admitted: of the former 4 were for malarial fevers and 4 for cholera. Out of these only 1 case of remittent fever terminated in death. Out of the 6 children treated 2 were for capillary bronchitis, and each of the diseases (ague, cholera, diarrhœa and Bright's disease) gave 1 admission; of these the case of cholera and that of ague recovered and the rest died. No other case occurred calling for operative interference, beyond two very minor operations; in the one an incision for fistula in ano, in the other a bubo was opened. Barring these, in the treatment of purely medical cases, punctures, for hypodermic injections of quinine, atropia, &c., were made. Recently I employed pneumatic aspiration for direct depletion of the lung in a case of pleuro-pneumonia, and the liver for a case of subacute hepatitis. In both the results were most satisfactory and encouraging.

Mortality and its causes.

11. Attention is invited to para 10.

12. On the 7th June cholera appeared in the person of a lance naique, who occupied a hut in the end row facing the south: and from the same row, another sepoy was admitted on the following morning. These cases, which were treated in the cholera shed, terminated fatally, the former on the day of admission and the latter on the 10th. On the 8th also, a woman, wife of a subedar residing in the adjoining row, was admitted. She was at the time suckling a babe about 5 months old, which although taking the breast both before and during the mother's choleraic attack, escaped the disease. I look upon this somewhat singular and interesting feature as very noteworthy. The woman recovered. On the 9th two other women were admitted, one the wife of another subedar, whose hut was in the opposite side of the same block as that of the last case, and the other was the wife of the second (sepoy) case, who was in attendance on her husband when taken bad. She was then about six months advanced in utero gestation, and not only did she recover from cholera, but went on to the full term and was delivered of a healthy child, which is alive now. The next case was that of a child at 12 years, who recovered. It was followed by that of a woman, mother of the preceding. She nursed her child when attacked, and recovered. With her there were in the shed her husband (who first attended on the child and then on his wife) and their three other children, all of whom escaped cholera. Out of the seven persons attacked, two died and five recovered. Cholera generally prevails throughout the hot and rainy months in the city of Augar, in consequence of the constant intercommunication with the insanitary cities of Oojein and Indore, both of which are notorious from a very early period in the history of the disease. At this time it was raging in the surrounding villages; and two cases had occurred amongst the followers of the 1st Regiment Central India Horse, during the month of April. Simultaneously with this, a severe outbreak took place in a row of huts, situated in the South-East extremity of the camp, and inhabited by women. There were no cases of diarrhœa in the Wing either during or before the small outburst in June; but a few people had come to the city dispensary for it. At the latter institution two or three cases of cholera were treated weekly throughout the summer, which, strange to note, it is said had been an unusually mild one. On the 22nd September an isolated case appeared in the person of a fifer, who lived in a hut facing S. N. end row, and had immediately before his attack been dissipating in the city, to which I could trace the disease. This case, which terminated in recovery, was the last that occurred in the detachment. In March three cases of small-pox were under treatment. The subjects were all said to have been vaccinated, but one had very slight cicatrices. From the records I learn that appropriate hygienic measures had been adopted by Surgeon Ferguson, to prevent the dissemination of the disease, and on referring to the returns, I also find that all three recovered.

Vaccination and re-vaccination. 13. 16 primary vaccine operations were performed during the year, and 17 re-vaccinations; the results were most satisfactory.

Invaliding and its causes. 14. 1 subedar, 2 jemedars, 1 naigue, and 3 privates took their pension, under provisions of G. G. O. No. 98 of 1878.

Requirements and recommendations. 15. I have little else to offer beyond the points alluded to already under the foregoing headings. The hospital and its establishments are complete and satisfactory.

16. Under this important and interesting heading I may observe that in the majority of cases of mild, uncomplicated, intermittents, the margosa or neem bark answers fairly well. I am in the habit of using the decoction of this costless indigenous drug by taking 4 ounces of the inner layer of the bark, boiling it in a pint and a half of water, and then straining. This must be freshly prepared in order to be efficacious. It is also a very good vegetable stomachic, and I very frequently give it in combination with ferruginous and mineral acid tonic remedies. I prescribe the sulphate of cinchonidine also, and after a somewhat extended trial of both, I consider the latter in doses varying from 10 to 20 grains more efficacious. In severe cases of the remittent or continued type, I generally resort to quinine by mouth, per rectum, and subcutaneously, in accordance with indications of the particular case under treatment. The new preparations of salicis cortex or willow bark, salicylic acid and its salts, namely salicylate of soda and potash are, as far as my own somewhat limited experience goes, very valuable medicinal agents for the reduction of high temperatures, which they do very satisfactorily, whether the pyrexia be of malarial or inflammatory affections. Beyond this they do not possess any antiperiodic virtues. The sulphate of atropia administered hypodermically in one-hundredth part of a grain, reduces hyperpyrexia. In a case of severe remittent I found the cold bath and affusion very useful in reducing the high temperature which menaces life: in this case the baths had to be repeated several times in the twenty-four hours and for eight days. Directly the temperature was lowered to the normal degree, quinine was perseveringly employed by mouth and through the skin, with the happy result that the case terminated in recovery. In cases of dysentery, more especially of a scorbutic nature, I beg to remark, that bael is a very useful remedy. I found that the fruit as supplied from the stores was too dry and did not answer so well as fresher samples obtained from the jungles. Recently in Augar, I had the opportunity of treating a case of severe tetanus (in the person of a young peon) with cannabis Indica administered through the lungs, by making the patient smoke, in doses of from 15 to 20 grains, of the powdered leaves with about three times its bulk of ordinary tobacco. The patient was continuously kept under its influence with very favourable results and the termination of the case in recovery. I believe that opium, belladonna, and other anti-spasmodic drugs, would likewise prove of much greater avail when thus administered. The reason of this belief is further strengthened from the fact that one of the ways, indeed the commonest, in which death takes place is by sudden apnoea; it is clear therefore that the physiological action of these drugs would be more direct, quicker, greater and more lasting on the diaphragm and other respiratory muscles, than when given in the ordinary way. I believe, also, that it is for these identical reasons, that chloroform when inhaled proves much more successful than when exhibited by mouth. I would most respectfully commend the plan to the notice of those in charge of large civil institutions, where opportunities occur with frequency, and where there are facilities for giving full effect to the treatment by isolation and removal of all causes that are likely to counteract the anti-spasmodic narcotic effects of these drugs.

Inspection by Deputy Surgeon General WYLLIE.

Inspected 18th December, 1878. Hospital ample and excellent, and all its details in satisfactory order. Health at date normal; but was less favourable than ordinary owing to cholera in June and relatively large incidence of ague in autumn. Mortality has also been exceptionally high for this sulubrious station. Lines clean, trim, and in good order; sullage from family quarters received in vessels outside, and thence removed twice daily under proper supervision. The regimental garden still continues to prosper, and without any extraneous assistance shows a credit balance. Men and officers have alike expressed to me their appreciation of a boon which costs the sepoy only 6 pies a month; and the medical officer has stated that while the Infantry are entirely free from scurvy, the men of the Central India Horse, of finer physique and generally flesh eating, are tainted with that disease, and he attributes the immunity of the former to the fresh vegetable diet. Unfortunately conditions elsewhere are by no means so favourable for gardening as they are here, suitable ground is either inconveniently distant or water supply defective, but at Mhow I think there would be a chance of success if the same excellent management could be counted on.

H. M.'s 28th Regiment N. I.

RAJKOTE.—In Medical charge of Surgeon J. F. KEITH, M.B.

Average Strength	678	Deaths in Hospital	15
Do. Present.....	612	Do. out of do.	9
Admissions	1,542	Invalided	18
Daily Sick	40·6	Sick Leave.....	35

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Rajkote.....	130·3	3·6	2·2
1876	Do.	110·5	3·8	2·1
1877	Do.	60·5	2·4	0·6
	Average...	100·4	3·3	1·6
1878	Rajkote.....	251·9	6·6	2·4

1. The regiment was stationed at Rajkote till the 6th December, when Head-quarters marched from Rajkote to Surat, arriving on the 13th December. Location and movements. The Head-quarters marched from Rajkote to Wadwan, thence by train to Surat. The Left Wing followed, leaving Rajkote 30th January, and arriving at Surat on the 7th February 1879. One Detachment, consisting of 82, left Dwarka 1st January and arrived at Rajkote 14th March 1878. Another detachment left Rajkote 9th February for Dwarka; this detachment left Dwarka 25th January 1879 and arrived at Surat on the 5th February 1879. Another party of 13 men accompanied the Political Agent from 4th January to 31st December.

The lines and their surroundings.

2. The same as in last report.

3. There are three well built latrines, situated at a good distance from the lines, about due North. During the Monsoon months these are made use of, but the Station conservancy establishment is very deficient, and 3 to 4 days' accumulation frequently takes place. I have seen this often happen at hospital, and repeated representations had to be made before its removal was effected. On account of this difficulty the latrines are abandoned during the dry season and trenches are used instead; but they are too far away and would not be reached at night. The conservancy establishment should be rendered efficient at the earliest possible opportunity.

4. Is from wells, and in ordinary seasons is good and abundant. The mode of drawing the water is by leather buckets, which form a source of impurity. Water supply. Various impurities always floating in the atmosphere adhere in large quantities to the damp leather, which in a moist heated atmosphere forms a field for the production of fungoid elements, which rapidly become developed during the interval the utensil is not used, and which are washed off directly it is thrown into the well. Again, there is a large tree over one of the wells, and leaves and bird droppings are continually falling into the water from it.

5. Vegetables were extremely difficult to procure and very dear. The sepoys suffered, in consequence, from scurvy, which complicated and intensified every disease; and the unusual mortality, I believe, was in a great measure owing to this complication. The first symptoms appeared as giddiness, inability to double, a disinclination and want of power for sustained exertion; neuralgia and muscular pains in large muscular masses, as in back and calves of legs; pain in principal joints, without any swelling. Afterwards scurvy appeared in its true character, giving rise to subdermic and subaponeurotic effusions of blood, with the usual gum lesions.

6. The duties, exercises, and amusements are of the usual kind. A talimkhana exists in the lines, but the men were towards the end of the year, before leaving Rajkote, so sickly that all parades had to be suspended for a time. Duties, exercises, and amusements.

7. Hospital is a good one, well situated, well ventilated, clean, and in good repair. Accommodation for hospital establishment is defective, as has been frequently reported. Hospital and its immediate surroundings.

8. The general physique of the men is as a rule good. Some old and unfit sepoys exist in the regiment, but they will be invalided in due course.
 General health and physique. The general health of the regiment has not been so good as last year. In 1877 there were 377 admissions; in 1878 there were 1,542 admissions.

9. The extreme dryness of last year was succeeded by an excessive rainfall (50 inches 35 cents), which raised the subsoil water to the surface, the wells being mostly all full to the brim, then the rapid fall of the subsoil water after the rain ceased gave rise to malarious fever, which raged like an epidemic amongst the civil as well as the military portion of the community.
 Influences of climate or local circumstances on health.

10. Of 1,542 admissions, ague gave the largest number, viz., 1,119, next in order febricula gave 36, dysentery 35, diarrhoea 30, asthma 31, and rheumatism and scurvy 21 each.
 Details of treated.

11. There were 15 deaths in hospital. Of these 5 were due to cholera, 4 to ague, 2 to diarrhoea, and 1 each to paralysis, guinea-worm, asthma, and neuralgia. Nine deaths took place out of hospital—cholera 4, suicide 3, and ague and drowning 1 each.
 Mortality.

12. The only epidemic was cholera, which gave 7 cases and 5 deaths. Pettenkoffer thinks there will be no widespread cholera epidemic unless four conditions of soil are present—(1) an impure porous soil, which has recently been rendered (2) moist by rise of ground water, and then has been (3) penetrated by air during the fall of the ground water into which the (4) specific germ of cholera had found its way. At Rajcote all these conditions were present when cholera disappeared entirely, and an unprecedented outbreak of malaria took place.
 Epidemics.

13. Successful 44. Good lymph was supplied when applied for from the Superintendent of Vaccination, Rajcote, and all are protected. The recruits on their arrival are vaccinated at once, whether they have marks or not, but as a rule they are protected, and vaccination has no effect on those who are.
 Vaccination.

14. Fifteen men were invalided for discharge for debility, chronic rheumatism, varicose veins, and emphysema. Three men were discharged with gratuity.
 Invaliding and its causes.

15. Under heading 7, the defective accommodation for the hospital subordinate staff is pointed out. The Native Medical Pupil resides in quarters which would be occupied by the Second Hospital Assistant if he were present at head-quarters, no other residence being available. I would suggest enlargement of the present building by the addition of another room to each, and the erection of a house for the Native Medical Pupils.
 Requirements and recommendations.

Special observations, new experiences in treatment, sanitation, &c.

16. I have nothing to submit under this head.

H. M.'s 23rd Regiment N. I. and 6th Regiment N. I.

INDORE.—In Medical charge of Surgeon B. N. KOYAJI.

1. The Right Wing H. M.'s 6th Regiment N. I. is at present located at this station. The wing arrived here on the 13th May last, on detachment duty of six months, relieving the Right Half Battalion H. M.'s 23rd N. L. I., which had been stationed here since the 25th October 1877.
 Location and movements.

2. The lines are situated about two miles from the native city of Indore, and westward of the civil station. They consist of ten blocks of single-tiled huts, built of sun-dried bricks set in mud. They have no special arrangement for ventilation. The lines have been lately repaired and the cubic space in each hut has been increased from 670 cubic feet to 830 cubic feet by raising the roof of each block two feet. The plinths of the huts are still low, their mean height being about six inches. The accommodation for the men is quite sufficient. The streets are kept clean, and the men are encouraged to make small garden plots in front of their huts. The bathing water from the married men's quarters is directed by means of open drains into the beds of plants or small garden plots in front of the men's huts. The quarters for the Native officers are situated to the west of the men's lines, and are in a good sanitary condition. They are capable of accommodating five officers.
 The lines and their surroundings; present condition, hygienic or otherwise.

3. The conservancy is effectually carried out. There are two well-built latrines situated about 150 yards to the North-East of the lines. One of these is for the males and has nineteen seats; the other is for the females and has eight seats. They are washed and cleaned three times a day. Dry earth is used as a deodorant and disinfectant. The solid excreta, and dirty water, which is kept separate from the solid excreta, and collected in receptacles made for the purpose, are carted away out of the limits of the cantonment, and buried in pits. The Native officers' latrines are situated westward of their quarters, and are kept very clean.

4. The water supply is very abundant, and is derived from two wells in the vicinity of the lines. The wells have been cleaned out and deepened since last report. One of them is about 10 yards from the South end of the lines, is 48 feet deep, and has 12 feet of water. The other is near the hospital, is 46 feet deep, and has 13 feet of water. The water appears to be of good quality, but no analysis has been made for want of apparatus.

5. Vegetables are very scarce and dear here. The prices of the principal articles of consumption are almost the same as reported last year. On account of the continued dearness of provisions, some of the married men are suffering from the effects of insufficiency of proper food. There were many applicants for shoe-leave during the year, on account of bites caused by ill-fitting boots.

6. The duties are lighter here than at head-quarters. There has been only one large guard at night, and that is over the jail. The men get $4\frac{5}{9}$ nights in bed during the week. The duties do not produce any ill effects. There is no gymnasium here, which is greatly required.

7. The hospital is situated about 80 yards to the North of the lines. As it is constructed to hold only eight patients, it is too small to accommodate all the sick of the detachment. During the month of October last, the accommodation was hardly sufficient, even after utilizing the verandahs, store and bath-rooms, and the cook-rooms. Ventilation is natural and good, but is liable to become defective in the cold weather if the doors be closed to avoid draughts on the patients, as there are no ventilators. There is a small latrine attached to the hospital, carbolic acid and McDougall's powder are used to disinfect the excreta, which are subsequently removed and disposed of in the same manner as stated of the line latrines. As there are no wards or separate buildings for the isolation of the sick attacked with contagious diseases, a tent is required to be pitched for such cases when they occur. There are no quarters for the Native Medical Pupil and hospital sweeper.

8. The general health and physique of the men of the Wing 23rd Regiment N. I. I. was good. The same cannot be said of the Wing 6th Regiment N. I. that is at present stationed here, as eight deaths have occurred from cholera, and the men have suffered considerably from ague. As cholera was prevalent round about Mhow and Indore, the men probably caught it whilst on the march from Mhow to Indore, the change from the climate of Aden to this malarious locality, the arrival of the Wing a month before the setting in of the rainy season, and thus the men being subjected to the anti-hygienic conditions arising from the influence of the unusual and excessive rainfall on this soft cotton soil, have been important factors in the causation of the unsatisfactory results as regards the health of this Wing. Many of the men show signs of a scorbutic taint, which they seem to have acquired while at Aden. With some few exceptions the men of this Wing do not appear to be fit for active service, particularly in a cold climate.

9. The total rainfall during the year under report was 49 inches and 49 cents, against 22 inches and 96 cents in the preceding year. The influence of this enormous rainfall on the health of the troops stationed here has been very bad. The European detachment that was stationed here also suffered from cholera and fever to such an extent as to necessitate its removal to Assirgurh.

10. The total number of admissions into the hospital from all causes in both detachments was 411, against 268 admissions during the year 1877. Malarious fevers were more prevalent than during the previous year, and furnished, as usual, the largest number of admissions. The total number of ague cases in both Wings was 245. The largest number of cases occurred in the months of June, September, and October. There was only one admission from remittent fever. The case was complicated with head symptoms and ended fatally. Bowel complaints come next in the order of frequency. Diarrhoea furnished 18 cases, colic 29, a mild form of dysentery 15, and dyspepsia 2 cases. There were twenty admissions from contusion, and fourteen from cholera.

11. The total number of deaths during the year was twelve, against one in the previous year. The Wing 23rd N. L. I. lost two men, one from small-pox, and one from chronic bronchitis. Ten deaths occurred in the Wing 6th Regiment N. I. The following are the causes of mortality—cholera 8, remittent fever 1, pleurisy 1, total 10. Five deaths occurred amongst the followers; four women died from remittent fever, and one from cholera.

12. Two cases of small-pox occurred in the month of March, one amongst the followers in the person of a sepoy's wife, the other in the person of a sepoy. Both were unprotected. The sepoy died on the 12th March, but the other case recovered. Cholera was prevalent in the native city of Indore, and also at Mhow, during the year under review, but there was not a single case in the lines before the arrival of the Wing of the 6th Regiment N. I. Soon after its arrival here, fifteen cases occurred in less than a week; one amongst the followers in the person of a sepoy's wife, the rest were sepoys. The first case occurred on the evening of the 14th May, and the last case on the 18th May. Nine cases proved fatal, eight sepoys and one follower. The medical officer under whom the cases occurred has informed me that the probable cause of the outbreak of cholera was the offensive water from a nullah, situated at a distance of about three miles from the camp, where the men halted for an hour whilst on the march from Mhow to Indore, and some of them partook of the water. This is further supported by the following facts:—1st, that only those men who partook of that water suffered from the disease; 2nd, that the families of the sepoys of this Wing, and the men of the Wing 23rd N. L. I., who did not halt near the nullah, were altogether free from the disease.

13. Total number of primary vaccinations amongst the children of the Wing 23rd N. L. I. was 10, all of which were successful. There were 11 re-vaccinations, of which 6 were successful and 5 unsuccessful.

14. Five men were sent up to be invalided from the Wing 6th N. I. before the Annual Invaliding Committee. The following are the causes:—chronic rheumatism 2, muscular rheumatism 1, chronic bronchitis 1, hæmorrhoids, internal, 1.

Requirements and recommendations.

15. Quarters for the Native Medical Pupil and hospital sweeper are the requirements I have to submit for the consideration of the proper authorities.

16. The cinchona febrifuge has been used as a substitute for quinine in the treatment of intermittent fever. It answers very well in the milder forms of this disease, but 20 and 30 grain doses have no influence on the severer forms of ague. Quinine succeeds generally in checking the disease, when the cinchona alkaloids fail.

Inspection by Deputy Surgeon General WYLLIE.

Inspected December 24th, 1878. All in creditable order, and the duties efficiently and carefully conducted. Accommodation for sick, while sufficient ordinarily, proved inadequate in autumn, when it became necessary to utilize for patients the cook-house and other out-offices, owing to unusual prevalence of ague from exceptionally large rainfall. The men's huts have been improved since my last visit, by raising the walls 2 feet and thus materially increasing cubage. But the lines are radically defective in the fact that the streets are far too narrow for free and sufficient ventilation, besides that the dead level of the locality, and insufficient cuttings, lead to flooding and dampness. Drainage from family quarters, hitherto objectionable, is now being improved. Health shows unfavourably, under ague, compared with former experience; and particularly in mortality, cholera having unfortunately appeared on the march from Mhow, resulting in 8 deaths of 14 attacked.

SIND DIVISION.

Average Strength Present during the year	3,952
Average Daily Sick per cent. to the Average Strength Present ...	4·3
Ratio of Mortality per cent. to the Average Strength Present	1·2

H. M.'s 1st Sind Horse.

JACOBABAD.—In Medical charge of Surgeon J. McCLOUGHRY.

Average Strength	488	Deaths in Hospital	1
Do. Present	471	Do. out of do.	5
Admissions	480	Invalided	23
Daily Sick	14·7	Sick Leave	13

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875.....	Jacobabad	187·2	3·3	1·9
1876.....	Do.	211·2	4·3	1·5
1877.....	Do.	176·9	5·2	0·8
	Average...	191·8	4·3	1·4
1878.....	Jacobabad	101·9	3·1	0·2

1. The Head-quarters of the Regiment remained in Jacobabad since last report. A detachment of 184 men, which had been on escort duty with Major Sandeman, Governor General's Agent, in Khelat territory, returned on the 11th of February. Parties varying in strength from 10 to 103 sabres were on duty at the various outposts in Katchi.

2. The accommodation in the pendals has been already described, and no changes have been made during the year, except repairing the damages caused by the rains of August and September last. About 70 men live in the married men's quarters. All the buildings are exceedingly damp on account of the attraction the salt in the soil has for the subsoil water, which is very near the surface during the inundation season. Were they raised on plinths, this might to a certain extent be obviated.

3. The latrines are simple enclosures without pans of any description. The filth is removed from them twice daily to a place about a mile from camp, mixed with the litter from the horse lines, and burned. On account of the great evaporation and the power of the sun's rays, this is satisfactorily accomplished.

4. The supply of the station has been previously reported on. The water of the outposts is extremely bad on account of dissolved impurities, Soorie being worst in this respect. That of the latter contains large quantities of common salt, and I also suspect the presence of some salts of magnesia. It acts on a person unaccustomed to its use as a purgative of considerable power. There is some reason to believe that this water may be a large factor in the production of scurvy, so common at this outpost.

5. The circumstances of the men being as a rule good, they are able to purchase good food when it is procurable. Excepting during a part of the hot weather, when vegetables are scarce, all foods are plentiful in Jacobabad. The scarcity of vegetables at the outposts calls for some interference, as in all the parties coming from outpost duties I have examined, a scorbutic taint was visible in the majority. Meat forms a portion of the diet of all but six men in the Regiment. For the sake of giving a smarter appearance, some changes have been lately made

in the cold weather uniforms, which are questionable as to their utility. The alkhalac has been shortened and is now worn tighter; so that it looks somewhat like a tunic. The consequence is that the men are unable to increase their under-clothing when necessary, and the thigh is not, as formerly, protected from rain, &c. A coarse canvas-like material (double khadi) has been substituted for the dark green cloths of which the trowsers were originally made. The former is insufficiently close in texture to resist the piercing cold wind experienced in Katch and Khorassan.

6. The duties during the last couple of years have been very arduous, owing to the large numbers of men at the outposts and on escort. Some of the men play polo and others join their officers in hog spearing expeditions, &c. A gymnasium with a trained instructor is a desideratum.

Duties, exercise, and amusements; their effects on health.

7. The old ward, like most buildings in the place, is exceedingly damp, the brick flooring crumbling away, and the walls for three or four feet from the ground look as if they had been standing in water of that depth for some time. The servants' houses are in a state of complete ruin, and are not safe to occupy. The latrines are simple enclosures with a few common earthenware pans. The new ward built a couple of years ago is on a plinth, 3 feet high, which is not sufficient. Five or even ten feet should be the elevation of the floor in a place where the ground is so damp. Should the expense not prevent it, building on arches would be beneficial. The arched roofs in the hospitals, built according to the new standard plan, are objectionable here on account of their retaining the heat so long.

Hospital and its immediate surroundings

8. With the exception of a scorbutic tendency and a certain amount of anæmia in men returning from outpost duty, the general health of the regiment is good. The majority of the men being either Hindustani or Deccani Mussalmans, their width of shoulders and chest measurement are comparatively small; they are tall, long limbed, and active. Their endurance of fatigue and privations whilst exposed to great extremes of climate is the best criterion of their physical powers. My own experience proves that the class of men who form nine-tenths of the regiment remains healthier than Sikhs, Pathans, &c. when doing the same amount of work in a rigorous climate. This is due I think to the large amount of animal food they consume.

General health and physique.

9. A long-continued hot weather lowering their vitality, renders the men more vulnerable to the attacks of ague, which prevails during the drying of the inundation waters. The cold winds of December, January, and February cause annually a few cases of pneumonia in men whose constitutions are impaired by repeated attacks of malarial fever. The extreme cold experienced by men on duty above the passes seems to improve their health. They suffer less from fever, and when attacked by pneumonia, a greater proportion recover from that disease.

Influence of climate or local circumstances on health.

10. As usual the admissions for ague exceed those for any other complaint, 217 cases having been taken into hospital during the year. Contusions come next in frequency, accounting for 47 cases; they were caused chiefly by injuries received from horses. Ulcers and boils, due to a scorbutic taint, were prevalent during the hot months. Primary syphilis caused 11 and secondary 2 admissions, showing a considerable increase on previous years, and indicating the want of a lock hospital. There were 23 cases of rheumatism, the greater number of which were probably of syphilitic origin. Dysentery and diarrhoea have increased, and are due to the dampness of the lines.

Details of treated.

11. There were 6 deaths during the year; 4 occurred whilst the men were on leave, 1 in hospital, and 1 whilst on detachment duty at Dadur.

Mortality and its causes.

12. Twenty men were invalided, of which 10 were for old age, 3 for weakened intellect, 4 for malarious cachexia, 2 for chronic rheumatism, and 1 for defective vision.

Invaliding and its causes.

H. M.'s 2nd Sind Horse.

JACOBABAD.—In Medical charge of Surgeon M. L. BARTHOLOMEUSZ.

Average Strength	490	Deaths in Hospital	7
Do. Present	465	Do. out of do.	7
Admissions	570	Invalided	23
Daily Sick	18·8	Sick Leave	10

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Jacobabad.....	116·0	3·4	1·0
1876	Do.	117·3	3·4	0·5
1877	Do.	97·1	4·0	1·4
	Average.....	106·8	3·6	1·0
1878	Jacobabad.....	122·6	4·0	1·5

1. The regiment returned to Jacobabad from Mittri on the 7th April 1878. Since its return, the head-quarters have not moved from Jacobabad. A Detachment of 134 sabres proceeded to Quetta as escort to the Governor General's Agent in Beluchistan. This Detachment is now in Afghanistan.

2. Food not so plentiful as in former years, and more expensive on account of the so-called free trade which exists here, which in fact is a monopoly enjoyed by the Bunniahs, who combine and fix their own prices on grain. Before the inundation these traders store up grain, and when traffic is prevented by the floods, they fix their own prices on the stored grain. Vegetables are not plentiful, and cases of scurvy are not unfrequent, especially in connection with outpost duty. Since my last report the following improvements have taken place with reference to the sowar's clothing. A new pugrie has been adopted, which contrasts most favourably with that which has recently been discarded. Warm socks and gloves have been provided regimentally and kept in store, to be used on emergencies.

3. The usual drills and parades in camp. Outpost duty is only unhealthy on account of the scarcity of vegetables at some places, and bad water at others. The want of gymnastic training of recruits has been alluded to in previous reports.

4. The hospital now affords ample accommodation, but an additional fireplace is required for warming the ward in the cold weather, especially with reference to pneumonia cases, in the treatment of which a properly warmed room is of paramount importance. The hospital building requires thorough repair; at present it looks very untidy on account of the "kular" which is constantly rising from the ground and corrodes the lower part of the walls. This might be remedied by renewing this portion of the walls with burnt brick and mortar. The floors of the hospital require chunaming.

5. It is an undisputed fact that continued residence at Jacobabad has more or less deteriorated the health and physique of the men of this as well as those of every other regiment located in Upper Sind. But I am bound at the same time to state that perfect health is soon regained on marching out of this unhealthy area. For instance when the regiment camped out at Mettri last year and was away from the influence of malaria, the men perceptibly gained flesh, weight, and strength. A reference to returns of that period will show the small amount of sickness which prevailed. So that I have no hesitation in saying that this regiment is perfectly fit for active service anywhere. It will be observed that the detachment 2nd Sind Horse at Quetta is enjoying better health than any other native troops there.

6. The mixed cinchona alkaloid is now being used in every case of malarious complaint with success, but there are certain severe cases of a remittent character for which the sulphate of quinine is more suitable, therefore in my opinion quinine should always be provided to meet such exceptional cases. The number of admissions during the year under report was 570; of these more than 50 per cent. were due to fever.

7. There were 7 deaths in hospital—4 from pneumonia, and 1 each from ague, dysentery, and debility.

8. None.

9. Primary vaccinations 6, re-vaccinations 34, successfully.

10. Twenty-three were invalided during the year, for the following causes—one locomotor ataxy, four congestion of spleen, eight old age and general debility, five chronic rheumatism, one chronic curvature of the spine, and four malarious cachexia.
- Invaliding and its causes.
- Requirements and recommendations.
- Special observations.
11. Additional fireplace for hospital, renewing lower part of walls with burnt brick, chunaming floor.
12. None.

H. M.'s 3rd Sind Horse.

JACOBABAD.—In Medical charge of Surgeon G. E. E. BURROUGHS.

Average Strength	508	Deaths in Hospital	5
Do. Present	476	Do. out of do.	4
Admissions	489	Invalided	18
Daily Sick.....	12·6	Sick Leave	15

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Jacobabad	197·4	3·0	1·1
1876	Do.	218·8	4·5	5·6
1877	Do.	165·9	3·6	2·1
	Average.....	194·0	3·7	2·9
1878	Jacobabad and Afghanistan.	102·7	2·6	1·1

1. As the Regiment is on service, it is impossible to give all the details, but as far as can be remembered, the quarters for single men consist of seven blocks of buildings, placed parallel to each other; between the blocks two rows of horses are picketed, and each row is separated from the others by a road. The five central blocks are divided down the centre by a wall extending to the roof so as to form two long narrow compartments, placed back to back; each of which is again sub-divided by seven walls placed at right angles to the other wall, and which are only 8 feet high, into eight small compartments, affording accommodation for six sowars. None of the compartments communicate with each other, excepting above for ventilation. There is a doorway to each; but the whole building has no plinth. The two end buildings are simply divided into 8 compartments instead of 16 as the others are, and they face the central blocks. The ventilation is natural. The cubic space for each man is 870 cubic feet. No overcrowding ever occurs. Little or nothing is known of the married quarters, as they are not open to the inspection of the medical officers.

Sanitary defects.

2. Ventilation.—Cross ventilation is required in the lines; and in case other lines are ever built, I would suggest a plinth as well.

Drainage.—The drainage for surface drainage is not very defective.

Diet.—In the hot weather some means should be adopted to enable the sowars to obtain vegetables, which are not procurable at this time of year.

Duty.—There is no doubt but that the men are overworked, so that they have little time to themselves, but whether it is beneficial by keeping them out of the bazaars, is a question that cannot be solved until tried.

Water supply.—All the wells should be covered in to prevent foreign matters, as they do now, from obtaining ingress.

Surroundings.—The married men's quarters form a portion of the bazaar, and it is needless to point out what a fatal mistake this is, if an epidemic should ever break out in the bazaar, as the only alternative for the authorities would be to order the troops out of camp.

4.

The number of admissions and deaths have been considerably less this year. The only increase in admissions has been for scorbutus—one death occurred: all the cases had a tedious recovery. Out of 30 cases of dysentery, only one died from the after effects, when on leave. The mortality from bronchitis and pneumonia has been heavy in proportion to the admissions, as three cases out of ten died. One sowar died from sunstroke, one died from poisoning by arsenic, one from debility following ague, and one from hæmoptysis.
- Invaliding and its causes.

5. Eighteen men were invalided. Most of these were invalided for general debility.
6.

In June last, after a medical inspection of the whole Regiment, when over 45 per cent. were found to be more or less scorbutic, it was recommended that, as the sowars both in camp and on outpost duty were equally affected, that lime juice should be issued twice a week till such time as the men could obtain vegetables, and further, that a supply of lime juice should be forwarded, with instructions to each native officer at the various outposts.
- Recommendations.

H. M.'s No. 2 Mountain Battery.

JACOBABAD.—In Medical charge of Surgeon H. POPE, M.B.

Average Strength	179	Deaths in Hospital	1
Do. Present	166	Do. out of do. ....	...
Admissions	354	Invalided	19
Daily Sick.....	11·7	Sick Leave	4

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Aden.....	43·3	1·6	1·5
1876	Jacobabad.....	314·7	8·0	10·5
1877	Do.	324·5	10·4	1·3
	Average.....	245·0	6·7	4·4
1878	Jacobabad.....	213·2	6·1	0·6

1.

The Battery remained at Mittree from January to April 1878, they then marched to Jacobabad, where they stayed from April to October. In October they left Jacobabad, and marched to Quetta and Chuman on field service.
- Location and movements.
2.

When they were at Chuman and Mittree the men were under canvas, and in Jacobabad they were in permanent lines, which have been described in previous reports.
- Lines, &c.
3.

In regard to the system of conservancy, the water supply, quantity and quality of the food, &c., I am unable to give information, as I was not then in charge; but all these were the same as in the case of the 2nd Sind Horse who accompanied them.
- Conservancy, water supply, &c.
4.

The total number of cases treated during the year amount to 375, the majority being cases of malarious fever, the next in order of frequency being bowel complaints, rheumatism, contusions, and ulcers.
- Details of treated.
- Mortality, &c.

5. There was one casualty in hospital from dysentery and none out of hospital.
- Invaliding.

6. Nineteen men were invalided, chiefly on account of fever, old age and debility, and dysentery. All the men were of long service.
7.

There was an adequate supply of warm clothing served out to the men, which proved beneficial during the winter while on service.

H. M.'s 19th Regiment N. I.

KURRACHEE.—In Medical charge of Surgeon K. R. KIRTIKAR.

Average Strength	700	Deaths in Hospital	12
Do. Present	681	Do. out of do. ....	...
Admissions	1,244	Invalided	26
Daily Sick	24·6	Sick Leave.....	4

Year.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Sholapur	93·6	2·1	0·3
1876	Do.	51·6	1·7	0·5
1877	Do.	117·1	5·2	1·4
	Average...	87·4	3·0	0·7
1878	Kurrachee.....	182·6	3·6	1·7

1. The Regiment remained at Kurrachee from 1st January to 11th December 1878.

Location and movements. A detachment of 212 men of the Right Wing left for Hyderabad on the 9th of October 1878, to relieve the 1st Belooch Regiment. Severe malarial fever having prevailed among men of this detachment, and those on duty having got not more than a night in bed, the rest of the wing followed on the 6th of November. On the 11th of December the head-quarters left Kurrachee for Jacobabad, on field service, and having reached there on the 20th instant, continued to remain at that station till the end of the year. The Right Wing left Hyderabad on the 10th December and arrived at Jacobabad on the 17th. An escort of a Native officer and 41 men was sent off from the head-quarters at Sukkur with a convoy of camels to Jacobabad on the 14th December. It arrived at Jacobabad on the 19th December. On leaving Sukkur on the 16th December, the head-quarters left behind a Native officer and 50 men to furnish guards till the arrival of 1st Grenadiers at Sukkur. This party joined the head-quarters on the 23rd of December. An escort of 36 men was also sent off from Jacobabad with a survey party proceeding on duty in the Murree and Boogti Hills. This escort had not returned to the head-quarters when the year closed.

2. The lines are situated on an irregularly rising ground, and have plenty of open space around. The sepoy's quarters are in a perfect state of repair, but the Native officers' quarters, with the exception of two, were uninhabitable during the unusually heavy rains of the year under report.

3. The excreta and line sweepings are removed in carts regularly morning and evening. In the month of July last, on reference being made to me, I directed the attention of the authorities to the faulty construction of the regimental latrines, especially with regard to the deficient means for the passage and subsequent collection of the foul water which at present runs at random behind the latrine wall, forms a miniature cesspool, and doubtless damages the latrine foundation. The proposed improvements not having been practicable, I believe from pecuniary considerations, the latrines wanting repairs most were temporarily closed and others opened. With alternate closing and opening of a series of latrines for short periods, the sanitary arrangements were as well carried out as circumstances permitted.

4. It is a matter of regret and no less of surprise, that such an important station as Kurrachee should suffer from a positively bad supply of water. To instil habits of cleanliness into a class of men to which the sepoy generally belongs, and to prevent a series of cutaneous diseases which are the essential condition of uncleanness, a liberal supply of water is absolutely necessary. The water of Kurrachee, apart from its being of inferior quality, is decidedly limited in quantity. Owing to the unusually heavy rains of the year under report, much of the brackishness of the water was removed, but the saline and organic impurities were visibly increased.

5. Fish, flesh and cereals are abundant and cheap usually. There is, however, a marked want of fruit. Since the rains vegetables have risen in price quite beyond the means of the sepoy. This is partly owing to the destruction of vegetable life by the innumerable swarms of locusts that infested Kurrachee

during and after the rainy weather. The scorbutic taint that was noticed in several cases admitted during the last few months, may be attributed to the sepoy's inability to procure vegetables at a cheap rate. Since the first apprehension of the present Affghan war, cereals have increased in price. This has no doubt affected, though slightly, the food supply of the sepoy.

6. The duties were not heavy. They consisted of furnishing guards, garrison and regimental duties. The exercise consisted of parades, running drill, and sword exercise. The recruits on joining are put through a course of gymnasium. This very useful course was started by the Adjutant of the Regiment about five months ago. Talimkhana sports are held weekly; and once a month, and on native festive days particularly, there is a grand display of native sports, in which all officers take interest. At the garrison sports in September last several sepoys were noticed to have taken a prominent part, and even distinguished themselves.

7. Considering the bad state of health in which the Regiment left Sholapore, and the short time in which the sick list was reduced on arrival at Kurrachee, the change may be said to have proved highly beneficial. There are cases, however, wherein the change has not apparently done much good, for I have found men suffer from ague with the same severity with which I saw them suffer at Sholapore during the few days that I was there. The health of the Regiment may be said to have been generally good until the Regiment sent out a detachment to Hyderabad. At this station, the severity with which the men were attacked may be termed almost epidemic. It is not possible to determine to what precise cause the unusually large number of admissions at Hyderabad were due—whether to the tremendous rains and the consequent accumulation and evaporation of stagnant waters, or to the renovation of the malarial poison that the men brought with themselves from the famine-stricken camp of Sholapore. The probability is that there was a combination of both.

8. The hospital is well-built on a high foundation and with paved floors. It has two well-ventilated roomy wards, on either side a small central room, which latter was used as a dispensary. There are besides two rooms at each extremity of the building. Two of these formed the Hospital Assistant's quarters, one formed a store room, and the fourth formed a ward for women or for special cases as occasion required. The hospital has a large compound with well-grown shady trees around. Occasionally offensive smells were noticed from the civil quarters, where the lines of the rural police are situated. They no doubt come from the public latrines, which are by no means scrupulously clean; the sooner therefore measures are taken to shut them up, the better it will be for the neighbourhood, military or civil. The hospital latrines are punctually cleaned twice daily, and the hospital and the outhouses are in a thorough state of repair, notwithstanding the immense damage done to the compound wall during the heavy rains, by water accumulating knee deep and forcing the walls through.

9. Kurrachee has the advantage of sea air, which I have already said had a very salutary effect on the general health of the Regiment. Soon after the rains, which were greater than any known for several years, the health of the men did not seem to be quite as good as one might expect. There was an increase in the number of fever cases. The probable reason is, that the whole town being totally unprovided with a regular drainage system, the water collected and remained stagnant in several places, rank vegetation increased and in time died away. All this under the action of a powerful sun could not produce a perfectly healthy atmosphere. As an example of local circumstances affecting the health of the sepoy, I may mention the beneficial effect produced by the existence of a lock hospital in Kurrachee. The number of admissions for venereal diseases has been very small, and placing it side by side with that of the last year, it compares favourably.

10. There were 1,244 admissions during the year under report, contrasting rather unfavourably with 1,043 of the previous year. It is necessary to remark however that 342 of these admissions were among men of the Hyderabad detachment during a period of 8 weeks, from 10th October to 7th December; 328 cases being admitted for malarial fevers, mostly of the quotidian type, and the rest for minor complaints. Of the remaining 902 admissions in the hospital at head-quarters, the largest number was in the month of November, viz. 136. Considering that the strength at the head-quarters was at that time only 476, and considering also the large number of fever cases at Hyderabad, the health of the entire Regiment was during that month anything but satisfactory. The admissions at the head-quarters for malarial fevers, chiefly of the quotidian type, were 504. Next to ague, the prevailing diseases were dysentery, diarrhoea, bronchitis, and contusions.

11. There were 11 deaths at the Head-quarters and 1 at Hyderabad. Eight of these occurred during the last quarter. The causes of death may be classified under one of the three following heads—1st, malaria, producing marked anæmia; 2nd, scurvy; and 3rd, syphilis. There were four deaths from ague of an adynamic type. One of these cases was phthisical, and another succumbed to an attack of acute bronchitis, while under treatment for ague. In the former case a cattarrhal thickening of the gall bladder to the extent of a quarter of an inch, was noticed. Considering the extreme rarity of such a condition, and the utter absence during life of symptoms indicative of it, it is worthy of special mention. There were two deaths from pneumonia—one at Hyderabad, and the other at the Head-quarters. There was only one death from diarrhœa in the early part of the year. One death occurred from rupture of aortic aneurism, a few hours after the patient's admission into the hospital, and before I had time to see him. Subsequent inquiries elicited the fact that the man had constantly suffered from a sharp pain in the chest, but had made light of it. There was one death in an incipient case of pleurisy, and one from acute bronchitis. Both died from exhaustion, and were highly anæmic. In one case originally admitted for chronic synovitis of the left knee joint, death was caused by peritonitis with rapid purulent effusion. The patient was scorbutic and had frequently to be treated for subacute synovitis of the knee. The last case that remains to be noticed, was under treatment for over five months. It was originally admitted for shoe-bite on the left tendo achilles. The bite developed by degrees into an unsightly ulcer, and subsequently assumed a fungating appearance with a foul surface, partly bleeding and partly discharging a thin ichorous fluid. No amount of tonics, antiscorbutics, poultice, and disinfectants could set the ulcer into a healing order. Now and then there was an attempt at healing. The patient died of exhaustion. His highly anæmic and scorbutic condition contra-indicated operative interference.

12. There were no epidemics in the Regiment. Small-pox having broken out in the town of Kurrachee in the middle of the year, prompt measures were taken to re-vaccinate the Regiment by way of precaution.

13. Of primary vaccination there were 16 successful cases and 2 unsuccessful. Between the months of September and November 225 re-vaccinations were practised, including 23 recruits. Only 124 of these were successful, although equal care was taken in all the cases. This may perhaps be cited as an instance in favour of those who advocate the theory that cases of re-vaccination don't "take" as long as they are under the influence of the virus of a previous vaccination. The removal of a detachment to Hyderabad, and the subsequent movements of the Regiment, prevented the completion of re-vaccination. It may be noted that 109 in the Regiment are protected by small-pox.

14. There were 26 men invalided during the year. All except two were over twenty years of service. Most of these were invalided for general debility—a very vague term—but sufficiently indicative of a condition in which no sepoy is efficient for active service. One was invalided for double inguinal hernia, one for chronic rheumatic arteritis and ankylosis of the right shoulder joint, one for locomotor ataxy, and one for secondary syphilis (hemiplegia, &c.)

15. The want of a filter and dead-house was greatly felt by me at Kurrachee. Great inconvenience is generally felt in a regimental hospital by patients on account of there being no cook for the hospital. In cases of minor importance, where a certain amount of bodily rest is essential, and where an "attending man" is not allowed, the poor sufferer has to cook his own food, to the greatest prejudice to his health. I therefore recommend that a cook may be added to the hospital establishment for such of the sick as would avail themselves of his services, with due regard to their notions of caste, &c.

16. Two cheap articles, namely, iodide of starch and biborate of soda, have been used by me with very great advantage in this hospital and elsewhere. Iodide of starch forms a very good dressing for syphilitic affections, and biborate of soda, whether as a powder, lotion, or ointment, is a good antiseptic and stimulant in the dressing of cutaneous and cellular tissue affections. In both these articles there is a harmonious combination of economy and usefulness.

H. M.'s 27th or 1st Belooch Regiment N. I.

HYDRABAD.—In medical charge of Surgeon W. G. H. HENDERSON.

Average Strength	698	Deaths in Hospital	7
Do. Present	655	Do. out of do.	4
Admissions	993	Invalided	22
Daily Sick	28·8	Sick Leave	5

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Sick leave.
1875	Hydrabad	92·6	4·1	0·1
1876	Do.	137·4	5·8	1·0
1877	Do.	99·8	4·2	0·6
	Average.....	109·9	4·7	0·6
1878	Hydrabad	151·6	4·4	1·1

1. The 1st Belooch Regiment L. I. was stationed at Hydrabad from the 1st of January until the 9th of October, upon which date it embarked for Sukkur *en route* for Jacobabad on board the S. S. Cranborne, and arrived there on the 16th idem. They then marched to Jacobabad and occupied the lines of the 30th Regiment N. I., proceeded on service. On the 22nd of November a detachment of 216 left for Sungila, in the Booghti hills, where they remained at the close of the year. The men enjoyed excellent health and suffered very little from shoe bite, considering the length of the marches, and the sandy, heavy, and in some places rocky nature of the soil.

2. The lines are composed of 48 detached flat roofed mud buildings, having a South-Westerly aspect. The buildings are not raised on plinths, but surrounding each pendal is a platform 6 inches in height and 4 feet broad. Ventilation is procured by 3 fixed cowls on the roof of each pendal and by lateral openings. The lines are in good repair and their hygienic condition carefully attended to.

3. The dry earth system was in use. In addition to the usual difficulties of keeping the fluids from the solid excreta and preventing the saturation of the floors of the latrines with urine, there was another, viz. that earth not of a sandy nature was very difficult to obtain. Latterly however earth more suitable for the purpose was procured.

4. For the first three months of the year, the supply was the same as in previous years. In April the Hydrabad water works were opened, and from that time the lines were supplied by six hydrants. The water is drawn from them and distributed by hand bheesties. The supply is from the river Indus, and is of excellent quality and free from all contamination.

5. Food was plentiful but dear throughout the year. Men with large families suffered in consequence. The uniform of the Regiment is in my opinion a most suitable one for native troops. It consists of a loose coat, knickerbockers with gaiters, and a substantial pugree. It is loose and roomy, at the same time smart and soldierlike.

6. The duties were not excessive and had no injurious effect on the health of the men. The men were in the habit of meeting once a week for the purpose of wrestling and gymnastics. This practice was encouraged and the meetings were very popular.

7. The hospital is a long flat roofed mud building situated to the rear of the lines, built on a six inch plinth and surrounded on three sides by a verandah 10 feet wide and 14 feet high. It is divided into three wards. The Hospital Assistant's quarters occupy the East end of the building. The second class hospital servants' quarters and dead-house are situated to the rear, beyond which there is a clear space. Ventilation is effected by 16 fixed cowls similar to those used for the pendals. The building is in good repair and the hygienic condition carefully attended to.

8. The general health of the Regiment compares unfavourably with that for 1877. The men are of good physique, their chest measurement and height being above the average.

9. The rainfall this year was very large for Sind, and the inundations so great that a considerable part of the country was under water for some time. Influence of climate or local circumstances on health. Malaria was in consequence very prevalent. The men suffered more as they travelled from Hyderabad to Jacobabad when the country was in this condition, and it was with difficulty that a dry encamping ground between Shikarpore and Jacobabad could be procured. Even after their arrival the men came to hospital in large numbers daily suffering from this complaint.

10. Out of the total number of 1,027 treated during the year, 605, considerably more than half, were admitted suffering from ague, owing greatly, Details of treated. as before mentioned, to the men being so much exposed to malarious poison. There has also been an increase in the number of admissions from venereal disease; 53 were admitted during the past as compared with 43 in the previous year. Admissions from diseases of the lungs and rheumatic affections are much the same as in 1877. A considerable increase in the admissions for diseases of the digestive system have also occurred; 69 were treated as compared with 43 of the previous year. There were 107 cases of injuries; this includes contusions, burns, and shoe-bites.

11. There were 11 deaths during the year; 7 occurred in hospital and 3 while absent on sick leave and 1 while travelling from the depôt to head-quarters. Mortality and its causes. The causes of the deaths in hospital were 4 from ague, 1 from coryza and heart disease, 1 from gun-shot wound, 1 from cystitis, 1 from hepatic abscess.

Epidemics.

12. No epidemic occurred during the year.

13. 16 children were vaccinated during the year, 12 of which were successful. Vaccination and re-vaccination. There were 48 re-vaccinations, of which 37 proved successful.

14. 18 men were invalided during the year, 11 from debility and old age and being unable to double on parade, 2 from chronic bronchitis, 1 from aneurism of abdominal aorta, 1 from convergent strabismus Invaliding and its causes. with myopia, 1 from chronic rheumatism, 1 from loss of finger, 1 from asthma. Four men were discharged with gratuity.

H. M.'s 29th Regiment N. I.

DERA GAZI KHAN.—In Medical charge of Surgeon A. ADAMS.

Average Strength	696	Deaths in Hospital	13
Do. Present.....	473	Do. out of do.	10
Admissions	989	Invalided	18
Daily Sick	30·8	Sick Leave	1

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions.	Daily Sick.	Deaths in Hospital.
1875	Karachi.....	85·7	3·3	0·6
1876	Do.	95·1	2·8	0·7
1877	Do.	66·8	2·7	0·5
	Average.....	82·5	2·9	0·6
1878	Dera Gazi Khan	209·1	5·6	2·7

Location and movement of Corps.

1. The regiment has been stationed at Mittri, Dera Gazi Khan, Quetta, and various stations in Southern Afghanistan.

Detachments.

2. There have been small detachments told off from time to time for various duties, which soon rejoined.

Topography and physical geography.

3. The undersigned does not know anything of the topography or physical geography of those stations, not having served at any of them with the regiment.

4. The climate of Quetta is said to be malarious with a damp soil, and that of Dera Gazi Khan and Mittri are hot ; there was a serious inundation at Dera Gazi Khan, which, besides other damage, was productive of much fever.
- Effects of climate.
- Lines available space. 5. Space appears to have been satisfactory.
6. The arrangements seem to have been very inferior at Dera Gazi Khan, no regular system being carried out. No latrines were permitted within cantonment limits; the men were obliged to go to the jungle outside. At Mittri, Quetta, and elsewhere the usual trenches were dug and attended to.
- Conservancy, sanitary arrangements.
- Water supply. 7. From various sources; generally considered good.
- Food, quality, and whether abundant and cheap. 8. Good and abundant, but said to have been rather dear.
- Clothing. 9. Winter clothing is heavy, warm, and comfortable, and that for the hot weather a light, cool, and suitable serge.
- Duties and their effect on health. 10. Duty is not considered to have been at any time excessive or prejudicial to health.
11. The men appear to keep up their amusements and exercise well, and generally give a good account of themselves when they meet their brethren from other regiments at such feats as running, wrestling, &c.
- Exercise, amusements, and occupation.
- Lock-up rooms and cells. 12. These were not good at Dera Gazi Khan.
13. The regiment marched from Mittri to Dera Gazi Khan, and subsequently from the latter to Southern Afghanistan. The year closed upon it in the Pishin Valley.
- Marches.
- Hospital and its surroundings. 14. Nothing to complain of under this heading.
- Ventilation. 15. Good.
- Overcrowding. 16. None.
- Accommodation. 17. There was always sufficient accommodation.
- Conservancy. 18. This was carried out by the usual hospital establishment.
19. From the same sources as that of the regiment. The general health appears to have been good, except after the inundation in Dera Gazi Khan, when there was serious manifestation of malarious affections.
- Hospital water supply.
20. There were 989 admissions to hospital, 13 deaths, and 18 cases invalided during the year. One case was granted leave on certificate for change of air.
- Sickness, mortality and invaliding.
21. Malarious affections, pneumonia, and bowel complaints.
- Principal causes of sickness.
22. Bowel complaints and chest affections were the leading causes of mortality.
- Principal causes of mortality.
23. One Hindoo and two Sikhs died during the period under report, while the remaining deaths were among Mussulmans.
- Mortality according to race.
24. Nothing traceable to it, no regular record having been kept.
- Influence of rainfall.
25. No epidemic manifestation.
- Epidemics.
26. There was no opportunity of carrying out vaccination, but fortunately the regiment is well protected.
- Vaccination and re-vaccination.
27. Physique considered excellent, general health fair.
- General health and physique of the men.
28. Nothing special.
- Treatment of disease when special.
29. None.
- Special observations.
30. The present return and report, such as they are, are completed under special difficulties of a rather exceptional nature. As many of the records from which they should have been compiled were lost during the march, on one occasion owing to the breakdown of a lot of camels during a night march, a

great many things appear to have been broken and stolen or fallen into the hands of the enemy during the night, and among those things many of the hospital records went. Then as I did not serve with the regiment till some time after the end of the year, I have little or no knowledge of what I have been trying to get into some sort of tangible form. It will be observed that many of the diseases are grouped together, but this is owing to there being no records, except the Morning State, for many months of the year; however I have tried to make the best of the material at my disposal.

H. M.'s 30th Regiment N. I.

JACOBABAD.—In Medical charge of Surgeon O. H. CHANNER.

Average Strength	709	Deaths in Hospital	3
Do. Present	565	Do. out of do.	12
Admissions	1,305	Invalided	17
Daily Sick.....	30·8	Sick Leave	23

Years.	Stations.	Rate per cent. to Average Strength Present of		
		Admissions	Daily Sick.	Deaths in Hospital.
1875	Jacobabad.....	142·1	4·4	2·2
1876	Do.	248·8	6·0	7·2
1877	Do.	139·3	4·1	2·1
	Average.....	176·7	4·8	3·8
1878	Mittri, Jacobabad and Quetta	230·9	5·4	0·5

1. The Right Wing and Head-quarters left Mittri (where it had been stationed since January 1st, 1878) for Jacobabad on April 6th 1878, joining the left wing. The whole regiment then remained quartered at Jacobabad until the 20th September 1878. A party of 280, under the command of a European officer, left Jacobabad as escort to Major Sandeman. On the 15th October the Head-quarters marched on field service and arrived at Quetta on the 3rd November and remained there till the end of the year. There were two outpost detachments of 14 men each at Thool and Kashmere. Various escorts, numbering from 4 to 26 in strength, were furnished during the year as Treasury Guards, &c. between Sukkur and Jacobabad, and up the Bolan Pass.

Lines and their surroundings, present condition and otherwise. 2. The lines are situated to east of camp, and are divided into separate quarters for married and single men. The lines are the same in condition to those described in previous reports.

3. Indifferent, there being no latrine accommodation for the single men, who therefore use the neighbouring jungle. The married quarters are supplied with latrines.

Water supply. 4. From wells, always plentiful and fairly good, except during the floods.

Food and clothing. 5. Sufficient in quantity and fairly good in quality. Vegetables scarce. Clothing is suitable, though the men complain it is not sufficiently warm in the cold weather.

Duties. 6. Consist of the usual guards, parades, and escorts. There are two outposts. The usual native games are kept up.

Hospital. 7. The new hospital was occupied for one month before the regiment left Jacobabad; the accommodation was ample, the ventilation good, latrines, post mortem room, and offices satisfactory.

General health and physique. 8. Indifferent, especially among the Sindhees. Malarious cachexia prevalent amongst the older sepoys.

Influence and climate. 9 Apparently very debilitating.

10. Fevers 570, dysentery 179. I am unable to give any details of the fever and dysentery cases which form so large a proportion of those treated.

11. In hospital three, one dysentery, one pneumonia, and one from valvular disease of heart (varietal unknown) followed by general dropsy. Out of hospital twelve, eleven of which occurred among men on furlough or sick leave, and one at head quarters at Quetta for valvular disease of heart. The patient dropped down dead in the lines.

Epidemics. 12. None.

Vaccination and re-vaccination. 13. Attended to.

14. There were 17 cases invalided; 1 for ague, 1 for dysentery, 1 secondary syphilis, 1 asthma, 1 abscess, 5 debility and old age, 3 chronic rheumatism, 1 cystitis, 1 scurvy, 1 enlarged spleen.



STATEMENT.

STATEMENT

Showing the SICKNESS, MORTALITY and INVALIDING in the

N.B.—The Regiments are placed as they stood

Regiment.	Station.	Movements in the year.	Average daily strength present during the year.	Average daily sick.	Admissions during the year.	Deaths.			Average daily sick per cent. to average strength.	Ratio per cent. of admissions to average strength.	Ratio per cent. of Deaths.		
						Present.					To average strength pre sent.	To admissions.	To average strength pre sent and absent.
						In Hospital.	Out of Hospital.	Absent.					
PRESIDENCY DIVISION, ADEN,													
1st Regiment L. C. ...	Malta ...	From Poona, proceeded to Malta on 1st May and after return it went to Poona and thence to Ahmedabad on 11th Nov.	479	17.9	1,039	2	...	3	3.7	216.9	0.4	0.4	1.0
Aden Troops ...	Kharmaksar ...	None.	94	4.2	192	...	...	1	4.4	204.2	...	...	1.0
9th Regiment N. I. ...	Malta ...	Proceeded to Malta on 1st May and returned on 17th Sept.	691	20.1	842	7	2	...	2.9	121.8	1.0	0.8	1.2
17th Regiment N. I. ...	Surat ...	Left for Dharwar on 3rd Dec.	668	24.7	1,130	5	1	2	3.7	169.1	0.8	0.4	1.1
21st do. ...	Bombay ...	None.	693	29.6	1,042	9	3	3	4.3	150.4	1.3	0.9	1.9
22nd do. ...	Do. ...	Left Ahmedabad on 28th April for Bombay, left Bombay on 6th Sept. for Poona, and thence proceeded to Belgaum on 19th Nov.	626	38.2	1,323	3	1	1	6.1	211.3	0.5	0.2	0.7
25th do. ...	Aden ...	None.	688	15.4	593	2	1	2	2.2	86.2	0.3	0.3	0.7
26th do. ...	Malta ...	Marched from Poona to Malta, on 29th April, arrived in Bombay on 13th Sept., and then proceeded to Ahmedabad.	694	25.4	1,279	9	1	6	3.6	184.3	1.3	0.7	2.2
Presidency Division Total			4633	175.5	7,440	37	9	18	3.8	160.6	0.8	0.5	1.4
POONA													
Poona Horse ...	Sirur ...	None.	483	10.7	352	5	...	1	2.2	72.8	1.0	1.4	1.2
Sappers and Miners ...	New Jhansi ...	Nos. 3 and 5 Companies left for Malta on 24th April and returned on 23rd Nov.	470	27.4	1,279	6	...	...	6.8	272.1	1.3	...	1.2
2nd Regiment N. I. ...	Belgaum ...	Proceeded on 12th Nov. to Nusseerabad.	632	18.4	508	3	3	2	2.9	80.4	0.6	0.8	1.1
3rd do. ...	Kolhapur ...	Left for Poona on 5th Dec.	664	19.4	1,309	9	...	4	2.9	197.1	1.3	0.7	1.8
4th do. ...	Satara ...	The Head Quarters with its dets. proceeded to Poona on 14th Nov.	655	17.7	850	10	...	1	2.7	129.7	1.5	1.2	1.6
5th do. ...	Poona ...	Proceeded to Kurrachee on 29th Nov.	636	23.2	975	4	2	...	3.6	153.3	0.6	0.4	0.9
6th do. ...	Do. ...	Proceeded to Satara on 6th Nov. sending dets. at Bombay and Asirghur.	595	37.2	1,345	8	...	2	6.2	226.0	1.3	0.6	1.4
12th do. ...	Dharwar ...	Left for Rajkot on 12th Dec.	702	18.4	708	8	1	1	2.6	100.8	1.1	1.1	1.4
13th do. ...	Malegaon ...	Proceeded to Mhow on 21st Nov.	663	22.6	763	4	...	5	3.4	106.0	0.6	0.6	1.1
14th do. ...	Belgaum ...	None.	636	27.9	726	16	...	3	4.4	114.1	2.6	2.2	2.7
16th do. ...	Ahmednagar ...	Proceeded to Ahmedabad on 16th Dec.	686	23.9	853	16	...	1	3.5	124.3	2.2	1.7	2.2
Poona Division Total...			6322	246.8	9,608	88	6	20	3.6	140.8	1.3	0.9	1.5
NORTHERN													
2nd Regiment L. C. ...	Deesa ...	None.	478	8.3	487	3	2	1	1.7	101.8	0.6	0.6	1.2
3rd do. ...	Neemuch ...	None.	455	18.4	992	1	1	...	4.0	218.0	0.2	0.1	0.4
No. 1 Mountain Battery	Rajkote ...	None.	120	8.9	287	2	1	...	7.4	239.1	1.7	0.7	2.3
1st Gr. Regt. N. I. ...	Ahmedabad ...	Marched on Field Service on 3rd Dec.	668	25.1	1,158	15	...	4	3.7	173.3	2.2	1.8	2.8
6th do. ...	Mhow ...	None.	641	17.2	795	16	2	4	2.7	124.0	2.6	2.1	3.2
7th do. ...	Rajkote ...	Left for Bhuj on 30th Dec.	647	31.6	1,251	10	3	1	4.9	193.3	1.5	0.8	1.9
10th do. ...	Neemuch ...	None.	659	64.5	1,981	8	...	4	9.7	300.6	1.2	0.4	1.7
11th do. ...	Bhuj ...	Left for Poona on 3rd Nov.	630	68.6	2,184	14	3	4	10.9	346.6	2.2	0.6	3.2
16th do. ...	Nusseerabad ...	None.	683	80.5	1,990	12	1	2	11.7	291.3	1.8	0.6	2.1
15th do. ...	Deesa ...	Left for Poona on 6th Dec.	629	11.0	481	6	...	6	1.6	76.4	0.9	1.2	0.8
20th do. ...	Baroda ...	None.	670	22.5	1,050	9	1	3	3.3	156.7	1.5	0.9	1.8
23rd do. ...	Mhow ...	Left for Ahmednagar on 15th Nov.	682	28.4	1,084	7	2	1	4.2	158.9	1.0	0.6	1.4
24th do. ...	Mehidpur ...	None.	690	26.3	1,258	13	1	...	3.8	182.3	1.9	1.0	1.9
25th do. ...	Rajkote ...	Left Rajkot for Surat on 6th Dec.	612	40.6	1,542	15	4	5	6.6	251.9	2.4	0.9	3.6
Northern Division Total.			8264	451.9	16,540	131	21	35	5.4	200.1	1.6	0.9	2.1
SIND													
1st Sind Horse ...	Jacobabad ...	None.	471	14.7	480	1	1	4	3.1	101.9	0.2	0.2	1.2
2nd do. ...	Do. ...	Arrived at Jacobabad on 4th April.	465	18.8	579	7	5	2	4.0	122.6	1.5	1.2	2.9
3rd do. ...	Do. ...	Marched to Afghanistan on 10th Oct.	476	12.6	489	5	3	1	2.6	102.7	1.1	1.0	1.7
No. 2 Mountain Battery	Do. ...	Proceeded to Sind Frontier.	166	11.7	354	1	...	...	6.1	213.2	0.6	0.2	0.6
19th Regt. N. I. ...	Kurrachee ...	Proceeded to Sind Frontier.	681	24.6	1,244	12	...	...	3.6	182.6	1.7	1.2	1.5
27th do. ...	Hydrabad ...	Left for Jacobabad on 10th Oct.	635	28.8	993	7	1	3	4.4	151.6	1.1	0.7	1.4
29th do. ...	Dera Gazi Khan. ...	Marched on field service on 2nd April.	473	26.6	989	13	...	10	5.6	209.1	2.7	1.3	3.3
30th do. ...	Jacobabad ...	Do. ...	565	30.8	1,305	3	1	11	5.4	230.9	0.5	0.2	2.1
Sind Division Total...			3952	168.6	6,424	49	11	31	4.3	162.5	1.2	0.7	2.0
Grand Total.....			23,671	1,042.8	40,012	305	47	105	4.4	169.0	1.2	0.7	1.8

NATIVE ARMY of BOMBAY, for the Year 1878.
in the Army List on the 1st of July 1878.

Invalided.			Constitution of the Regiment.								Strength remaining on rolls on 31st December 1878.	Average number of consecutive nights in bed.	Number of Recruits joined during the year.	REMARKS.
Invalided for discharge.	Discharged for physical disability.	For change of climate.	Hindus.		Mahomedans.		Christians.		Others.					
			Strength.	Died during the year.	Strength.	Died during the year.	Strength.	Died during the year.	Strength.	Died during the year.				
AND BOMBAY MARINE.														
30	2	7	297	2	154	3	8	...	...	...	459	13.5	22	
1	3	4	37	1	63	...	...	...	...	...	100	5.7	6	
63	1	13	540	8	97	1	12	...	...	...	649	4.5	38	
22	4	24	592	7	75	...	17	1	9	...	693	5.3	57	
34	13	12	460	12	260	3	21	...	...	...	631	19.6	52	
78	5	27	527	4	94	1	15	...	...	...	636	5.0	105	
10	2	9	571	5	97	...	5	...	8	...	631	3.7	3	Includes Det. at Perim.
60	4	21	493	14	131	2	14	...	5	...	646	7.2	50	
283	34	117	3,520	53	911	10	92	1	22	...	4,545	8.0	333	
DIVISION.														
26	2	4	198	2	296	4	1	...	...	...	495	14.7	39	Includes Company at Aden.
62	1	7	370	4	82	1	1	...	...	1	453	10.2	50	
38	1	14	538	8	77	...	17	...	21	...	653	4.7	37	
35	...	7	536	11	127	2	2	...	...	...	635	7.2	49	Includes Det. at Sholapur. Do. Det. at Bombay and Assirghar.
24	1	25	572	10	92	1	8	...	...	...	672	11.1	79	
32	1	7	586	5	114	1	7	...	...	...	707	4.4	85	
34	23	13	558	10	101	...	19	...	25	...	703	4.3	97	
13	4	6	559	7	117	1	15	1	29	1	720	7.8	51	
49	5	8	552	8	92	1	8	...	...	...	652	8.1	34	
29	1	16	536	17	58	2	95	...	...	...	689	7.1	50	Includes Det. at Maligaum.
41	...	21	587	13	73	3	13	...	8	...	631	5.4	52	
373	30	123	5,612	95	1,229	16	186	1	83	2	7,110	7.7	614	
DIVISION.														
17	2	4	276	3	193	3	6	...	...	...	475	6.0	27	Includes Squadrons at Rajkote and Poona. Do. do. Nassirabad.
35	1	12	295	2	160	...	3	...	...	...	453	8.6	29	
5	2	...	101	3	29	...	1	...	...	...	122	6.5	14	
27	11	13	570	16	84	1	17	2	...	...	671	3.9	78	Do. Det. at Sadra.
45	1	15	548	19	89	2	14	1	7	...	653	9.1	90	Do. Det. at Indore. Do. Right Wing at Tanna.
38	6	7	535	12	101	2	17	...	7	...	669	4.1	44	
24	4	45	536	11	112	1	12	...	14	...	677	6.3	37	
64	...	21	562	17	71	4	...	...	3	...	636	7.2	39	
39	1	28	593	13	82	2	11	...	9	...	695	5.4	46	
56	3	6	579	11	90	1	11	...	...	...	671	6.7	32	
30	5	20	593	12	77	1	13	...	...	...	633	5.2	51	
41	2	18	543	8	137	1	22	...	10	1	707	5.5	38	Includes Det. at Indore. Do. Det. at Agar. Do. Det. at Dwarka.
19	2	1	591	12	95	2	21	...	18	...	725	6.7	54	
15	3	35	585	23	71	1	11	...	12	...	679	5.2	44	
455	43	225	6,911	162	1,372	21	159	3	80	1	8,522	6.2	634	
DIVISION.														
23	...	13	47	...	430	6	...	...	1	...	473	5.3	25	
23	...	10	103	10	372	4	5	...	...	...	450	4.0	40	
16	2	15	114	3	376	6	5	...	...	...	495	3.9	40	
19	...	4	116	1	61	...	...	...	...	...	177	5.4	21	
25	1	4	593	11	85	1	17	...	10	...	708	*	90	
18	4	5	165	2	521	9	...	...	...	...	686	5.7	72	
18	...	1	84	3	589	20	1	...	3	...	677	*	45	
17	...	23	315	8	391	7	...	...	...	...	706	6.2	57	
159	7	75	1,540	38	2,825	53	28	...	14	...	4,407	5.1	399	
1,470	123	515	17,533	348	6,337	109	465	5	199	3	21,584	6.7	2,001	

* Information not obtainable.

Summary of the Statistics for the Year 1878 and Eight previous Years.

Years.	Average Daily Strength Present.	Admissions into Hospitals	Ratio per cent. of Admissions to Average Strength.	Average Daily Sick per cent. to Average Strength.	Deaths in Hospitals.	Ratio of Deaths in Hospitals per cent. to Average Strength.	Ratio of Deaths in Hospitals per cent. to Admissions.	Deaths out of Hospitals and on Leave.	Total Deaths in and out of Hospitals.	Ratio per cent. to Strength of Hindus who died in and out of Hospitals and on Leave.	Ratio per cent. to Strength of Mahomedans who died in Hospitals and on Leave.	Ratio per cent. to Strength in-validated for discharge the Service.	Ratio per cent. to Strength in-validated for change of climate.
1878.....	23,671	40,012	169.03	4.40	305	1.28	0.77	151	456	1.91	1.56	5.51	2.17
1877.....	22,561	25,130	111.38	3.49	215	0.95	0.85	95	310	1.39	1.22	4.51	2.03
1876.....	22,583	22,918	119.20	3.79	247	1.09	0.90	49	296	1.14	1.57	4.27	2.17
1875.....	22,819	25,475	111.63	3.38	213	0.93	0.83	66	279	1.30	1.18	4.27	1.83
1874.....	22,750	26,601	116.92	3.68	176	0.77	0.66	72	248	0.99	1.12	4.60	1.73
1873.....	22,967	29,035	126.86	3.82	165	0.71	0.56	81	246	.....			2.11
1872.....	22,903	36,209	158.09	4.54	226	0.98	0.62	95	321				2.13
1871.....	22,959	29,733	129.50	4.31	236	1.03	0.79	97	333				2.10
1870.....	22,715	28,380	139.08	4.33	191	0.84	0.68	95	286				2.33

1878

GENERAL DISEASES.

LOCAL DISEASES.

26 *m*

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